Scientific Atlanta

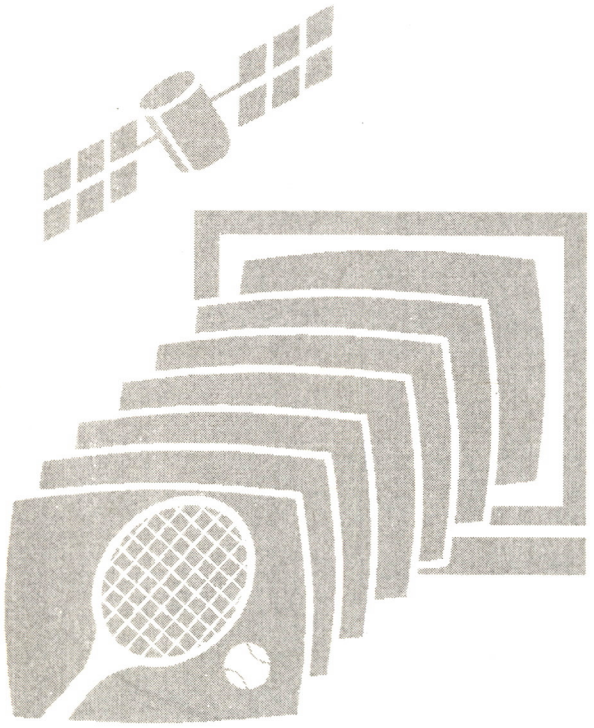
PowerVu Command Centre 3000

Control System Software

Version 3.00

With Graphical User Interface

User's Manual



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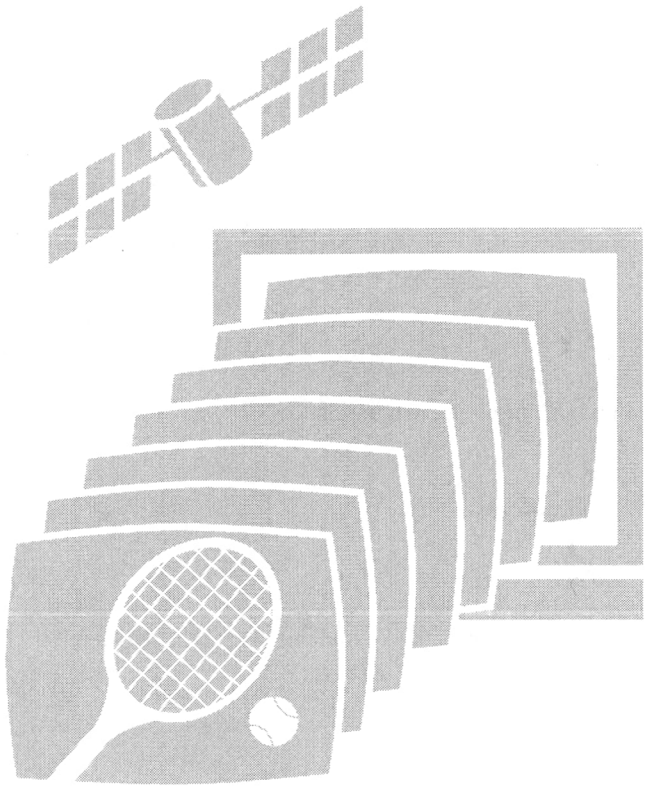

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PREFACE

The PowerVu Command Centre 3000 system software User's Manual contains instructions for using the PCC-3000 system software.

Before proceeding, please refer to *Application Note C, PCC-3000 Configuration Notes* and *Application Note D, PCC-3000 Customer Privileges*. These notes will assist in the process of setting up the Teleport's common carrier system, and can be found in the back of the manual.

The PCC-3000 system software is designed to run on:

- a COMPAQ ProSignia 300 computer (or equivalent) which provides the system's server capabilities and runs under the SCO UNIX operating system
- a COMPAQ ProLinea 5133 computer (or equivalent) which provides the system's client capabilities and runs under the Microsoft Windows operating system.

  Note: The PCC-3000 system enables a maximum of 10 client computers to link to the server, either through a network connection, or a modem link.

For additional information on using your computers, refer to the manuals provided with your equipment.

Manual Structure

This manual is organized into the following chapters. Each chapter contains detailed information about the windows used to control system functions.

Chapter	Name	Description
1	**System Overview**	Overview of the PCC-3000 system configuration.
2	**Getting Started**	Instructions for starting the computer, and general instructions for entering information into the system and how to log on and off the system.
3	**Uplink Configuration**	Instructions on how to enter and maintain system data, view and modify uplink equipment states, control the various cards and system components.
4	**Allocations and Assignments**	Instructions on how to view and control the amount of bandwidth used by the system, view and assign PIDs, and view and control frequency index assignments.
5	**Network Security**	Instructions on how to configure the system for networks, control encryption and security and generate multi session keys (MSKs).
6	**Virtual Channels**	Instructions on how to manage program description information, control virtual channel activation and events, assign cycling tier pointers to decoders.
7	**Transaction and Alarm Logs**	Instructions on how to view and manage alarm and event messages, search for specific transactions, and recall specific log files.
8	**Decoder Database Control**	Instructions on how to control the decoder database, load new decoders, print decoder database information, control EMM transmissions to the decoders.
9	**OS Download**	Instructions on how to upgrade the PCC-3000 system software
10	**Privilege Administration**	Instructions for adding and deleting customers and privilege groups, adding users and changing user privileges for the PCC-3000 system.
11	**Backup and Restore**	Instructions for backing up (and restoring) system files to diskette and the database to tape.
	Application Notes	Application notes and specialized information.
	Glossary	A description of acronyms and terms used in this manual.

Manual Conventions

This manual uses the following conventions to identify the various types of information contained within and to help you find the information quickly.

Bold Function Keys

All function keys within the text are displayed in a bold face similar to the following example.

"The Main Keypad is used for entering letters and numbers. It also contains the **Enter** key, **Tab** key, **Backspace** key, **Space Bar**, and **Shift** key. Refer to your COMPAQ manual for an explanation of the keys on the Main Keypad."

Bold Field Options

All field options described within the text for which there are two or more selectable choices are identified in a bold face.

For example, "Use this field to define the standard used in the video encoder. Select either **NTSC 525, PAL 625,** or **PAL-M 525**."

In most cases, you can use the pull-down selection box to view and select one of the preset field choices.

Windows and Field Descriptions

Whenever possible, a window is described in its own topic and the fields which populate the window are described in detail immediately after the window illustration.

Note: There are a few small windows/dialog boxes that are described within a parent window's topic because the small window is so closely related to the parent.

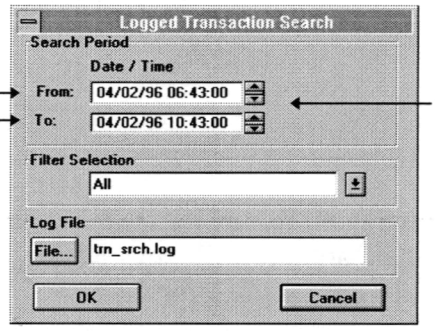
The general format for a window topic consists of:

- introduction
- window illustration
- field descriptions
- available actions when the window is the active window
- step-by-step procedures, if applicable.

For example:

Logged Transaction Search

The Logged Transaction Search window lets you search for user transactions logged during a specific time period. When you select Transaction History on the Logging menu, the system displays:



Field descriptions and field identifiers appear immediately below the window in the order they appear in the window.

Default field values, if applicable, appear to the right of the field name.

Search Period

From ➢ **NOW (minus) 4 HOURS**

Use the From field to define the date and time to start displaying user transactions. The date field is based on a calendar year "mm-dd-yy" format. The time field is based on a 24-hour clock "hh-mm-ss" format.

To ➢ **SYSTEM TIME – NOW**

Use the To field to define the date and time to stop displaying user transactions. The date field is based on a calendar year "mm-dd-yy" format. The time field is based on a 24-hour clock "hh-mm-ss" format.

Field Descriptions and Identifiers

Each field in each window is described in a section within each topic. Generally, the description explains:

- what the field does and how it is used
- what the preset choices are, if any
- the field's default value, if applicable
- how to modify the field
- special notes or other helpful information related to the field.

Each field in each field description can be one of several types:

- edit field
- subwindow access field
- view-only field
- check box field

- radio button field
- future applications field.

Edit Field

Edit fields are identified by the icon shown at the beginning of this sentence. If the user has the assigned privileges (authorization) to modify the window on which the field appears, the information in the field can be changed and updated by the user. For more information on user privileges, see Chapter 10, Privilege Administration.

Subwindow Access Field

Subwindow access fields are identified by the icon shown at the beginning of this sentence. This indicates that another window (or more windows) are accessible through this field either for editing or viewing. The subwindow access field is identified either as a:

- field on a window
- button on a window.

These subwindows can be accessed in various ways (i.e., clicking a button, double clicking a field or information row, clicking the Edit icon, or selecting Edit from the Actions menu.

Follow the instructions on screen or in this manual to access the subscreens.

View-Only Field

View-only fields contain information that can be viewed but not modified or deleted in any way. View-only fields are not identified by an icon.

Check Box Field

check box fields are identified by the icon shown at the beginning of this sentence. A check box functions very much like an **ON/OFF** switch.

If the check box appears like this it indicates it is **ON** and the selection type it identifies is activated.

If the check box appears like this it indicates it is **OFF** and the selection type it identifies is not activated.

Radio Button Field

Radio button fields are identified by the icon shown at the beginning of this sentence. A radio button functions very much like an **ON/OFF** switch.

If the radio button appears like this it indicates it is **ON** and the selection type it identifies is activated.

If the radio button appears like this it indicates it is **OFF** and the selection type it identifies is not activated.

Radio buttons differ from check boxes in that there can only be *one* radio button set to **ON**. Whereas, several check boxes can be set **ON** and activated *all at the same time* for a particular field.

Future Application Field

In addition, you might see the occasional reference to a field on screen which has no current functionality. These fields are in place for future applications and are identified by the icon at the beginning of this paragraph.

Default Field Values

If a field has a default setting, the default value is identified to the right of the field name in the field description section. Whenever you see the symbol ➢ with a value after it, it means this is the default value for that field. For example:

Audio Mode ➢ **Single Mono**

This field indicates the audio channel configuration output from the encoder. Each field can be set to either **Single Mono, Dual Mono, Stereo** or **Joint Stereo**.

Note: The decoder must be equipped to handle dual mono, otherwise only one audio channel is output by the decoder.

Actions

When a window is the active window (i.e., in front of all other windows with the title bar highlighted), the system usually provides a variety of actions that you can use to manage and manipulate the data displayed in the window. These actions are accessible from:

- the Actions menu
- the right most set of toolbar icons, and
- in some cases, from special buttons on the window itself.

These actions are described toward the end of the topic and appear similar to the following example:

Refresh Task Summary Actions

The following actions are available when the Refresh Task Summary window is displayed.

Each action is described similarly to the following example:

Display Refresh Task

Select a task from the list then click this button or select Display Refresh Task from the Actions menu to display the Refresh Task window. Use the Refresh Task window to customize the EMM transmission process for the selected task. For details, see the following topics, *Refresh Task* and *Selection Criteria*.

Italicized Topic Names

All topics or items in the PCC-3000 User Manual are identified in an italic face similar to the following example.

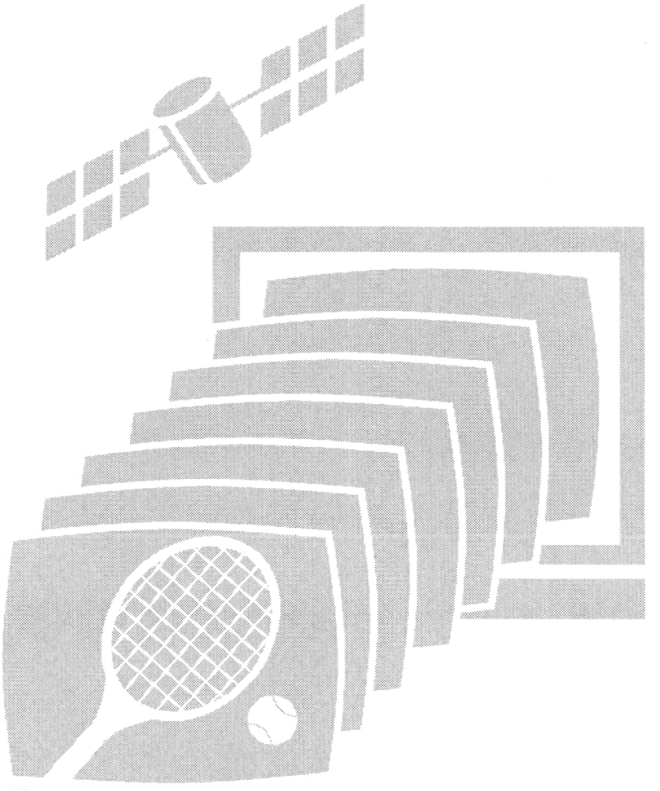
"For details, see *Scrambling Group* in the *Glossary*."

Privilege Information

Recommendations and special information on privilege assignments for both the Administrator and the programmer/customer are presented in the following format *after* the applicable window illustration.

Teleport/Administrator	Programmer/Customer
Privilege – Available as setting applicable to complete system.	*Privilege* – Recommend this feature be made available to customers *only if* they have access to their encoders. Otherwise, recommend this feature not be made available to customers.

Chapter 1 INTRODUCTION



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System Overview

The PowerVu Command Centre 3000 (PCC-3000) software application provides centralized control of the compression uplink system and compression decoder population.

The PCC-3000 system contains the following major features:

System Control

- Control the transmission of system data
- Control the hardware elements of the system (e.g., test pattern selection, etc.)
- View and modify uplink equipment operating states
- View and change the system time and date
- Backup system data.

Virtual Channel Service Assignment

- Control the transmission of virtual channels to decoders
- Assign a service to each channel
- Assign and queue events for each channel.

Decoder Database and Network Security

- Send authorization data to decoders and update decoders in the database
- Monitor and manage EMM transmissions to the decoders
- Search for and manage decoders in the database
- Define active networks and multi-session keys for security control.

Uplink Diagnostic Logging

- Track system activity and log system status and error conditions
- Display and print the diagnostic log to identify system problems.

System Transaction Logging

- Maintain a log of all users and their activities.

Privilege Administration

- Prevent unauthorized access to the PCC-3000 system via password protection
- Restrict access to certain system functions for each authorized user
- Add, delete or modify terminal assignments in the system.

System Configuration

The PowerVu PCC-3000 system is designed to operate on a COMPAQ ProSignia 300 computer (or equivalent). This computer is connected to the uplink system via an Ethernet link and an RS-232 digiboard interface. The uplink system itself is operated on a server running SCO Unix.

The PCC-3000 system is equipped with up to 34 additional RS-232 ports to communicate with a UPS (uninterruptible power supply), a printer for user activity and diagnostic logging, an external Business Computer, and a user-defined number (maximum 10) of remote client PCs (depending on server capacity) to provide remote access to the PCC-3000 system. The remote PCs run Microsoft Windows® 3.1 and the PCC-3000 graphical user interface software.

The figure on the next page illustrates one of the many possible PowerVu PCC-3000 system configurations.

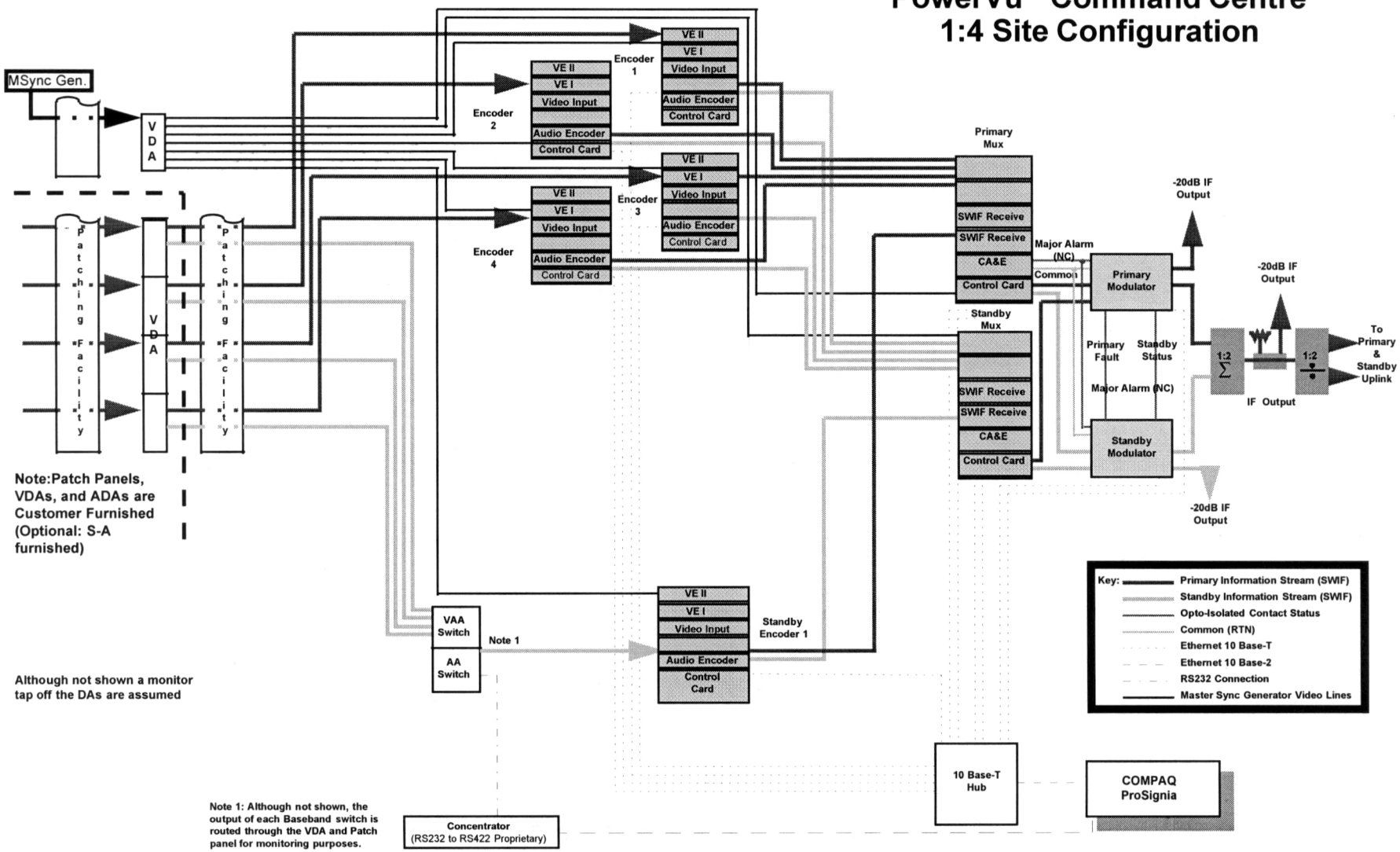
Maximum Number of Users

The PCC-3000 system is designed for a maximum of 10 users.

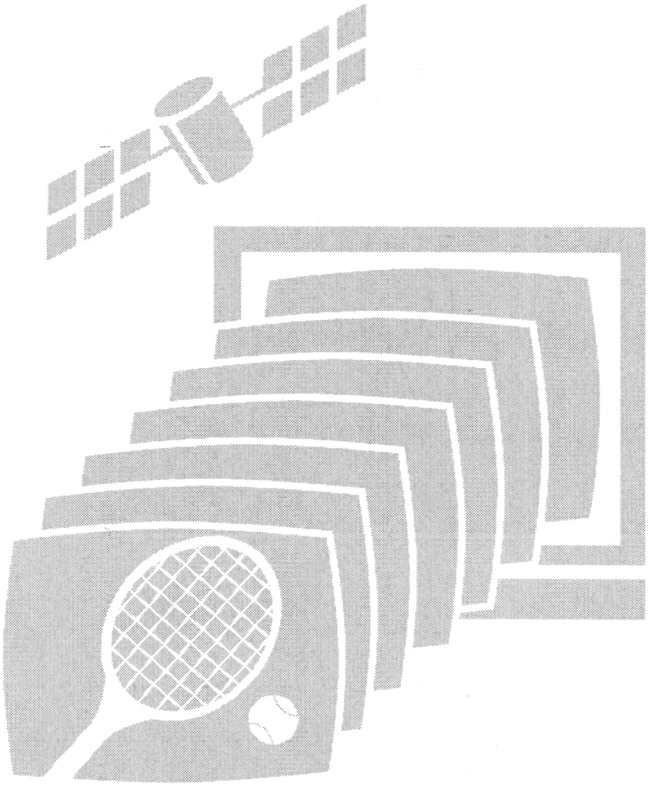
Monitor and Resolution

For optimum viewing and ease of use with the PCC-3000 graphical user interface, it is recommended that the PCC-3000 client PCs be equipped with a 17″ monitor with the screen resolution set to 1024 x 768.

PowerVu™ Command Centre 1:4 Site Configuration



Chapter 2 GETTING STARTED



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Introduction

This chapter covers general information to help you understand and get started with the PCC-3000 system. This chapter includes:

- a description of the client/server system architecture
- server computer general information
  - how to turn on the UPS and the server computer
  - how to log on and log off the PCC-3000 server
  - server configuration
  - main menu of the server computer (UNIX operating system)
  - set the system time and date
- client computer general information
  - how to turn on the client computer
  - information on how to log on and log off the PCC-3000 client
  - a brief explanation of how the computer is configured with its components
- a description of keyboard use and functions
- information on the components and elements of the PCC-3000 main window
- a discussion of Windows 3.1 terminology and basics.

The Client/Server System

The PowerVu PCC-3000 system is based on a *client/server* model. This means the main intelligence, storage, and processing power of the system resides in the server. In this case, the server is a COMPAQ ProSignia 300 (or equivalent) running under the UNIX operating system.

The server computer can service the requests of up to five client computers (remotely attached either through a network or modem connection).

The client computer is the COMPAQ ProLinea 5133 model (or equivalent) running under the MS-DOS and Windows 3.1 operating systems. OnNet software provides the link between the server and the client for both modem and network versions.

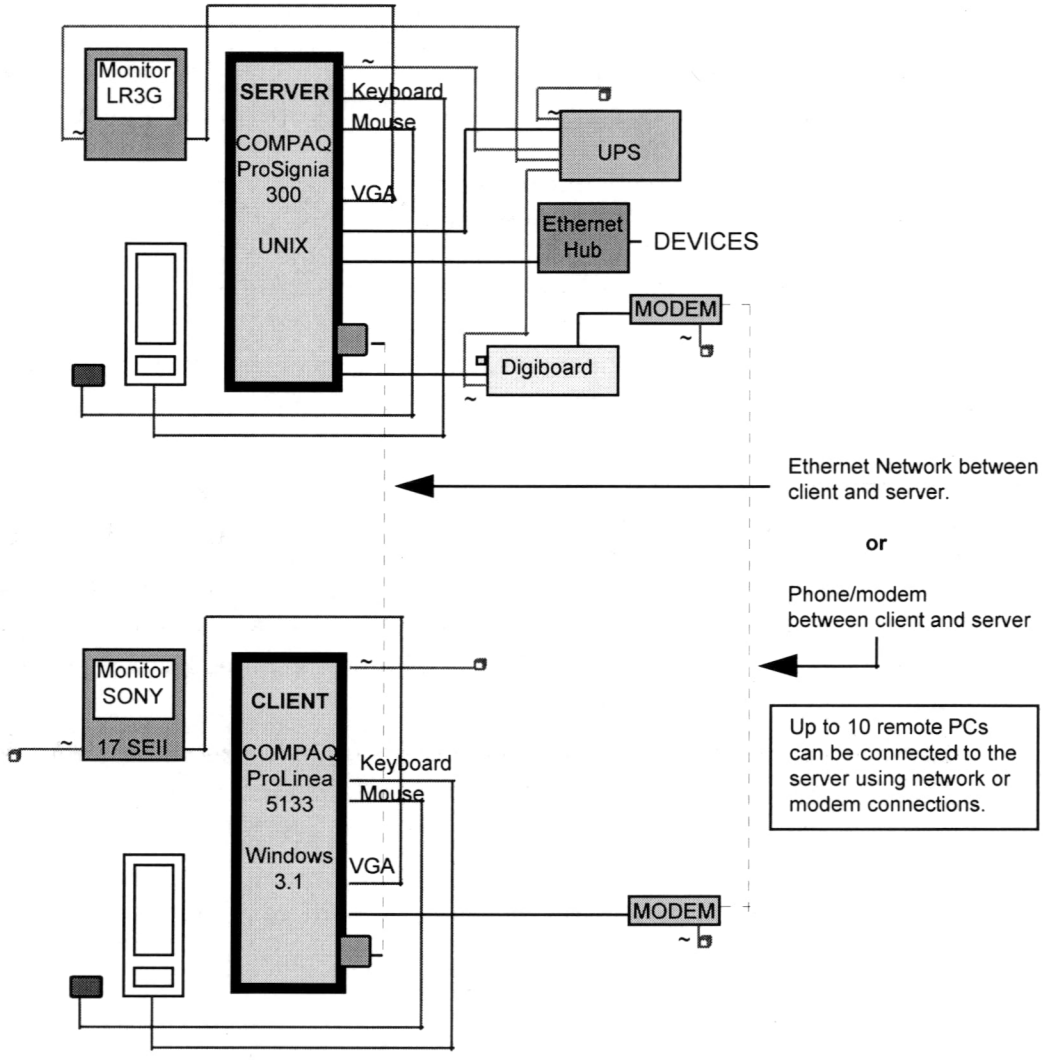
The server runs a text-only UNIX version of PCC-3000.

The client runs a Windows version of PCC-3000 which supports a graphical user interface to the server's UNIX version of PCC-3000.

The terms *server* and *client* will be used throughout this chapter.

This manual deals primarily with the operation of the *client* computer.
However, it also contains a certain amount of *server* instruction and procedural information to aid in general understanding of the client/server model and,
because certain functions are only available on (or controllable from) the server.

Client/Server Configuration



The Server Computer

This topic explains how to turn on the server computer and its UPS, and how to log on and log off the PCC-3000 system in its UNIX/server version.

Turn on the UPS

1. Ensure that the unit is properly connected according to the Installation manual.
2. Switch on the UPS and ensure that the power indicator is on and that there are no audible alarms.

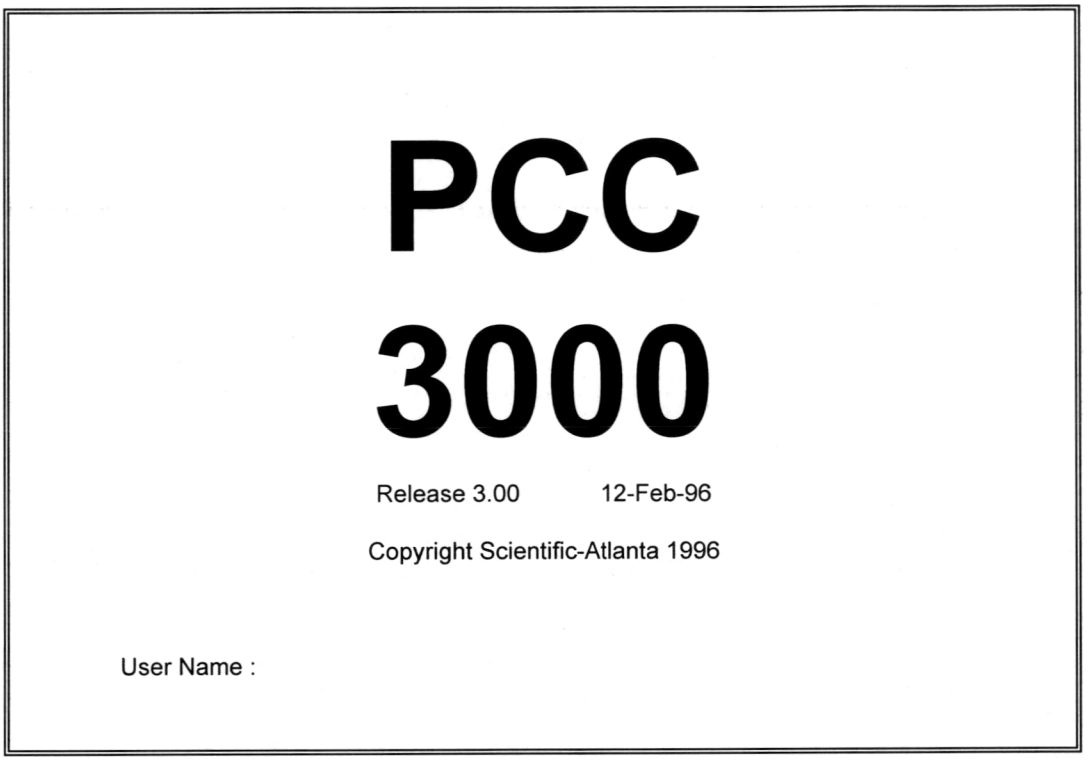
   If you experience any difficulty, consult the troubleshooting guide in the Installation manual. Do not proceed any further.
3. Proceed to turn on the computer.

Turn on the server computer

1. Ensure that the Compaq ProSignia 300 computer has been properly connected.
2. Switch on the Compaq computer and monitor. Ensure that the power indicators on both units are on.
3. Wait for the system to *boot up*. If the system does not boot up within five minutes and/or does not display the *PCC-3000 banner screen*, contact the system administrator for assistance.
4. Once the PCC-3000 banner screen is displayed, proceed to *Log Onto The PCC-3000 System*.

The PCC-3000 server logon screen

When the system is started, the *PCC-3000 Logon screen* is displayed. This screen is the entry point for all the functions in the system. Before you can use the system you need to enter a *User Name* and a *Password*. The password prevents unauthorized users from accessing the system.



Log onto the PCC-3000 server system

When the system is first installed, the default user name **emc** and the default password **emc** supplied with the system must be entered in order to log on. Afterward, your system administrator will assign you a *User Name* and *Password* which may contain up to 20 characters and which must be entered *exactly* as received (i.e., the identical arrangement of upper and lower case characters). In either case, the *PCC-3000 banner screen* must be displayed on the server's monitor before you can log onto the system.

1. At the User Name: prompt, type your user name, then press **Enter**.

   If your user name is incorrect (not recognized), an *Incorrect login* message appears.

2. At the *Password* prompt, type in your password, then press **Enter**. For security purposes, your password is not displayed on screen when you enter it.

If your login was successful the *Main Menu* appears. If it does not, retry logging on. You are allowed up to the maximum number of login attempts before the system locks out the keyboard, after which the login system must be reset by the system administrator.

Note: The system default for consecutive number of login attempts is set to 10 (when shipped). However, this number may have changed since your system was installed. This login parameter is set in the Terminal Summary. The system administrator may change your user name and/or system password at any time after system installation.

3. Once the *Main Menu* is displayed, proceed to *Chapter 3, PowerVu Command Centre 2000 User's Manual* (version 2.10) for information on how to operate and control the system, if the PCC-3000 is to be operated without the client PC.

   Note: The manual described above is the *UNIX* (text-only) version of the PCC-3000 *server* control software.

Warning

The PCC-3000 is designed to be operated through the client PC running the DOS/Windows 3.1 operating system. The character-based screens available on the server PC are *not* fully documented here. Therefore, only the functions defined in the remainder of this chapter should be used.

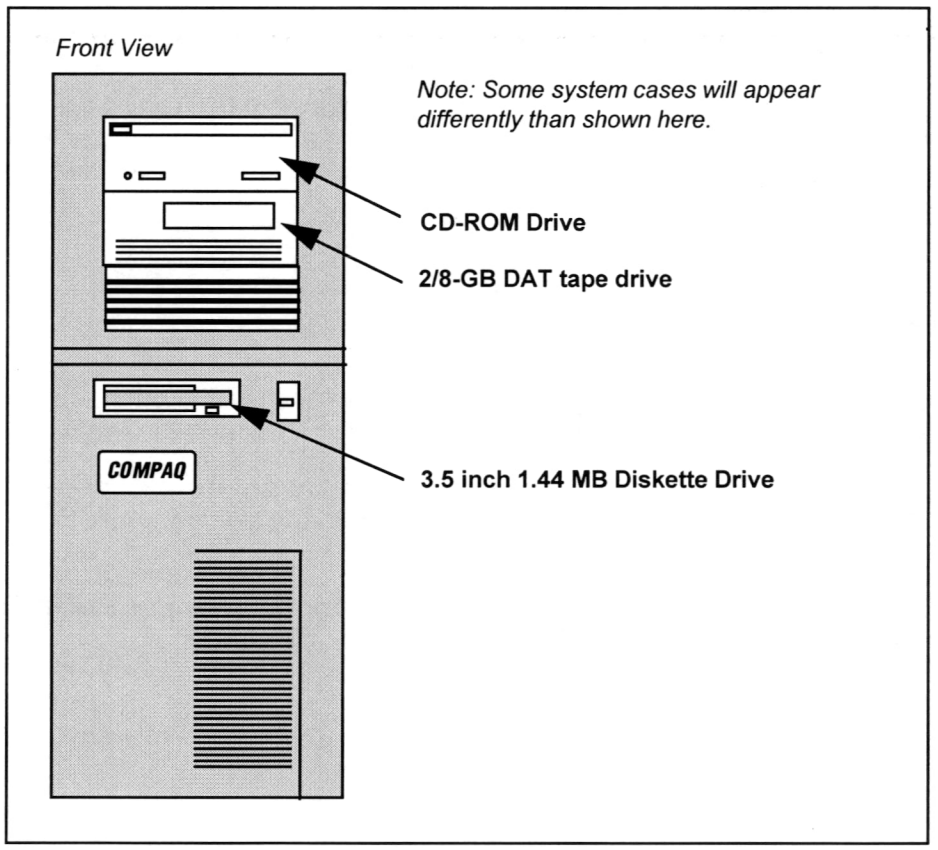
Log off the PCC-3000 server system

It is a good practice to log off the system when you are through using it. This practice helps prevent unauthorized users from accessing the system functions using your privileges.

1. Return to the *Main Menu*. From any screen in the system, press **End** until the *Main Menu* appears.
2. When the *Main Menu* is displayed, select **Logoff**, then press **Enter**. The *PCC-3000 logon screen* will be displayed as previously shown.

Server Computer Configuration

To perform PCC-3000 system functions such as making system data backups or restoring data from backups, you'll need to become familiar with the disk and tape drives in the computer and the external media used. The COMPAQ ProSignia computer is equipped with a 3.5 inch, 1.44 MB floppy disk drive and a 2/8-GB DAT tape drive. The figure below shows a fully loaded COMPAQ ProSignia computer. However, your computer system may not be equipped as shown. Please note the differences between your computer and that illustrated (e.g., number of diskette drives, etc.).


Front View
Note: Some system cases will appear differently than shown here.
CD-ROM Drive
2/8-GB DAT tape drive
COMPAQ
3.5 inch 1.44 MB Diskette Drive

COMPAQ ProSignia Computer - Generalized Front View

Any industry-standard 3.5 inch HD diskettes may be used in your computer. Make sure the write-protect tab on the diskette is in the **off** position when backing up data onto diskettes, and in the **on** position when restoring data from diskettes.

Before a diskette is used as a backup, the format utility must be run to initialize the disk to find any defects or "bad blocks". If bad blocks are found, the initialization program marks them as bad and they will not be used. However, if a diskette has been found to have bad blocks, it is recommended that it be discarded because this is an indication that the disk surface may be unreliable and may develop other

defects later on. A disk with no defects is always recommended for data backup purposes.

Tape Drives

To perform PCC-3000 system functions such as making database backups or restoring the decoder database from backups, you'll need to become familiar with the tape drive located in the front panel of the computer.

The 2/8-GB DAT drive accepts an 8 gigabyte capacity, 4 mm standard DAT cartridge tape.

The optional ACA-525 tape drive accepts a 525 MB capacity quarter-inch cartridge tape. Check that the write-protect tab on the tape is in the **REC** position when backing up data to the tape, and in the **SAVE** position when restoring data from the tape.

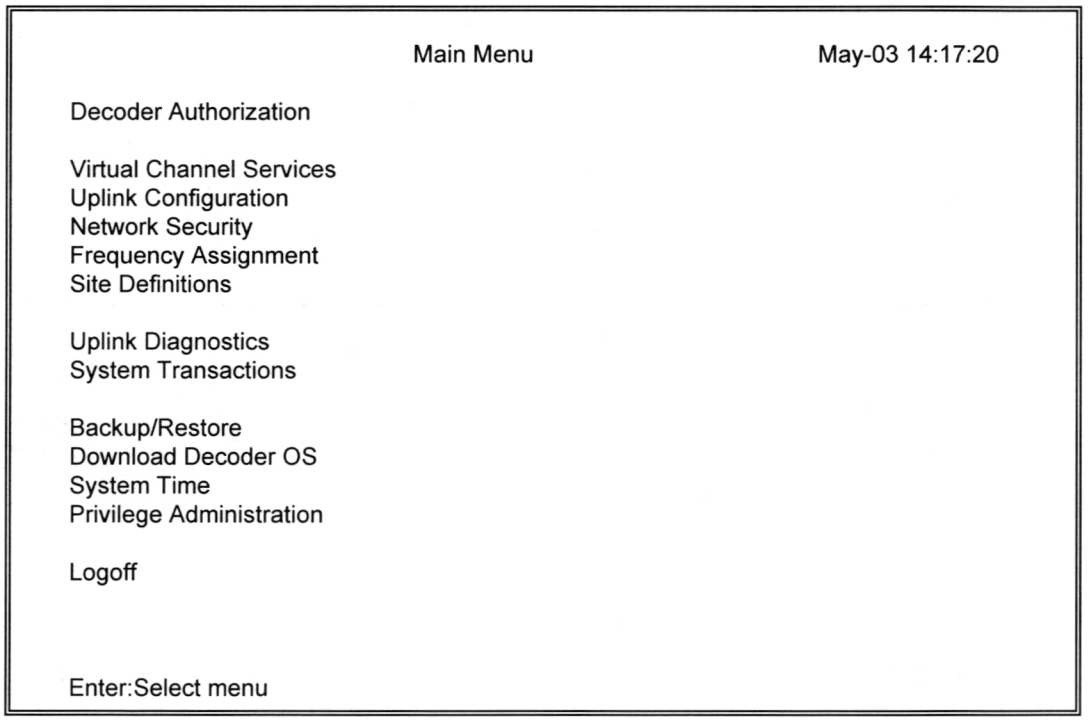
The Server Main Menu

The PCC-3000 server application is a menu-based system. A menu is a list of options and submenus through which you can control or display system functions and parameters.

The *Main Menu* is the first screen displayed after you successfully log onto the server system. It provides access to all the screens in the PCC-3000 system. The *Main Menu* is shown below.

Warning

The PCC-3000 is designed to be operated through the client PC running the DOS/Windows 3.1 operating system. The character-based screens available on the server PC are *not* fully documented here. Therefore, only the functions defined in the remainder of this chapter should be used.



Functions displayed on the *Main menu* vary depending on the privileges assigned to the operator by the network manager/system administrator.

Note: The system only displays and allows you to access those functions for which you have a "Read/Write" password privilege. Functions for which you have a "Read-only" privilege will display, but you cannot edit them. Similarly, a "None" privilege will not display the associated screens at all.

The **Enter**, **End**, **Page Up** and **Page Down** keys allow the operator to easily move through the PCC-3000 menu system. For more information on keyboard controllers, see *Compaq Keyboard* later in this topic.

How to Select an Option on the Server Menu

To select one of the options on a menu, use the cursor arrow keys to move the cursor to the desired option (the line on which the cursor is positioned will be highlighted), then press the **Enter** key. The system then displays the appropriate screen for the selected option.

For example, to select the *Uplink Configuration screen*, use the down arrow to move the cursor to Uplink Configuration, then press the **Enter** key. The system then displays the *Uplink Configuration screen*.

The *Main Menu* shows each function that you can access in the PCC-3000 server system. Each of these functions is defined below.

Decoder Authorization

This option enables you to authorize individual decoders for permitted virtual channel services. It also allows you to add, delete and edit decoder records in the database; send authorization data to the decoders; monitor the transmission of addressed data packets; add, delete and edit decoder refresh tasks for ADP transmissions; view decoder summary information.

Virtual Channel Services

This option enables you to display the service assignment for each virtual channel and (if you are assigned the proper edit privileges) to setup or change the authorized services.

Uplink Configuration

This option enables you to change the operating states of the uplink equipment such as the primary and secondary encoders, digital multiplexers, modulators, etc.

Network Security

This option enables you to change or display network security parameters for system encryption.

Frequency Assignment

This option enables you to set a frequency index and other related parameters for each site.

Site Definitions

This option enables you to define and identify multiple uplink sites, load site definitions from another site, and assign frequency indices to sites.

Uplink Diagnostics

This option enables you to display the previously logged PCC-3000 system status messages or those displayed in real time.

System Transactions

This option enables you to log and display PCC-3000 system activities (e.g., users editing the decoder database). The log may be backed up for future reference.

Backup/Restore

This option enables you to backup or restore system data to or from floppy disks, and to backup or restore database data to or from tape.

Download Decoder OS

This option enables you to download operating system software to the decoders from the PCC-3000 system.

System Time

This option enables you to display and change the system time and date.

Privilege Administration

This option enables you to display, add, and define login privileges for all users. Using this function, you can keep track of the number of users on the system and their respective terminals. You can also enable or disable any terminal in the system.

Logoff

This option enables you to log off the system. The *PCC-3000 banner screen* is redisplayed once you log off.

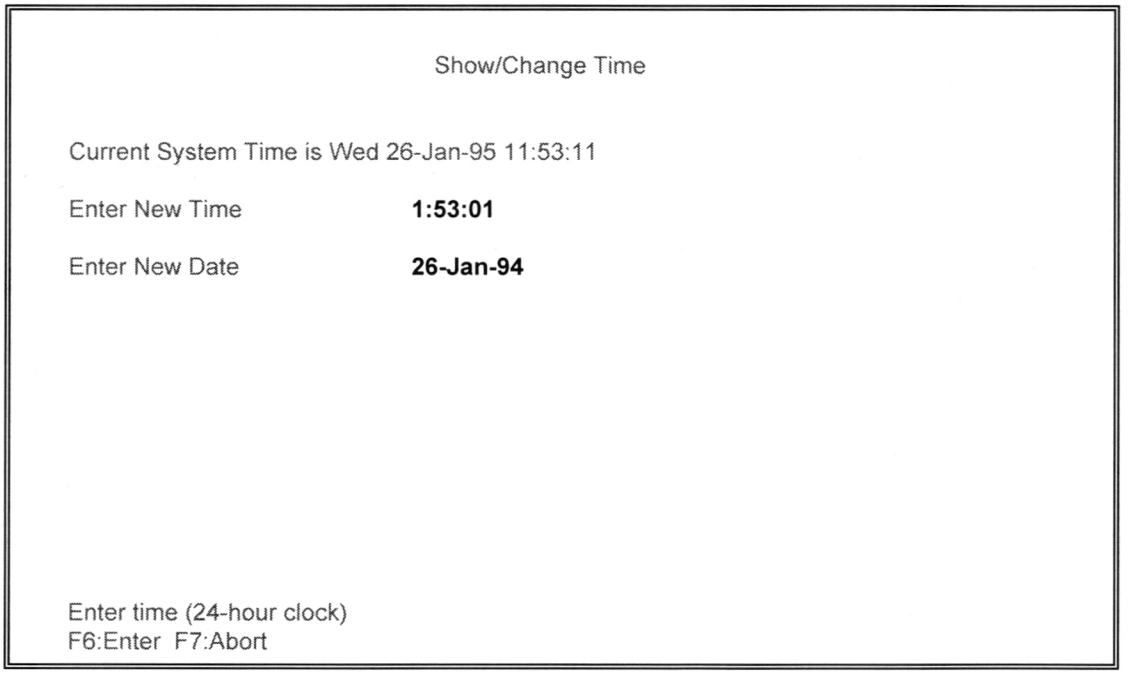
Change System Date/Time Screen

The *Show/Change Time screen* is used to display or change the date/time on the PCC-3000 system. Time data on the PCC-3000 system is used to schedule system data changes and to display the correct time on transmitted text "time" pages being aired.

Once the PCC-3000 system is running, time is based on the line frequency of the PCC-3000 system's power source. At startup or after a power failure, the initial time is read from a battery-backed calendar clock.

If you change the time on this screen, the time is written to the calendar clock and the line-frequency-based clock.

When you select System Time on the *Main Menu*, a screen appears similar to that shown below.



FIELD DESCRIPTIONS – SHOW/CHANGE TIME SCREEN

Enter New Time

Use this field to enter the new time. Place the cursor in the field and type in the new time.

Note: The system uses a 24-hour clock. Be sure to enter the hour based on a 24-hour time period. The system time on this screen must match the local time for all programs to be broadcast at the correct time.

Enter New Date

Use this field to enter the new date in the format (**dd-mmm-yy**). Place the cursor in the field and type in the new date.

HOW TO USE THE FUNCTION KEYS ON THIS SCREEN

F6 Press **F6** to save any new settings on this screen.

F7 Press **F7** to abort any changes made to the screen and return to the previous screen values. Only usable if changes have not been saved by pressing the **F6** key.

The Client Computer

This topic explains how to turn on the client computer, and how to log on and log off the PCC-3000 system in its Windows/client version.

Turn on the client computer

1. Ensure that the computer is properly connected.
2. Switch on the COMPAQ ProLinea computer and monitor. Ensure that the power indicators on both units are on.
3. Wait for the system to boot up. If the system does not boot up within five minutes and/or does not display the Windows 3.1 program manager screen, contact the system administrator for assistance.
4. Proceed to log on to the PCC-3000 system.

Log onto the PCC-3000 client computer

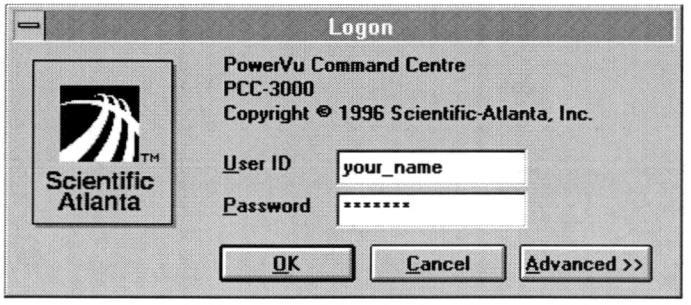
When the system is first installed, the default user name **emc** and password **emc** supplied with the system must be entered to log onto the system. Later, your system administrator will provide you with your own user ID and password for secure system access.

1. With the Windows 3.1 program manager screen displayed, locate the PowerVu Command Centre program group and double click on the PCC-3000 icon.

   PCC-3000

   The system displays the PCC-3000 main window and then displays the Logon window.

   Note: To log onto the system, the PCC-3000 logon window must be displayed on your main PCC-3000 window.

2. In the User ID box, type your user name, then press **Tab**.
3. In the Password box, type in your password, then click **OK**, or press **Enter**.

If your logon is successful, the Logon window disappears and the main PCC-3000 window is displayed.

If your user ID or password is incorrect (not recognized by the system), the system displays the message *Login Failed.*

If you receive this message, retry logging on. You are allowed up to three (3) login attempts before the system locks out the keyboard, after which the login system must be reset by the system administrator.

Note: The maximum number of users on the system at one time is five.

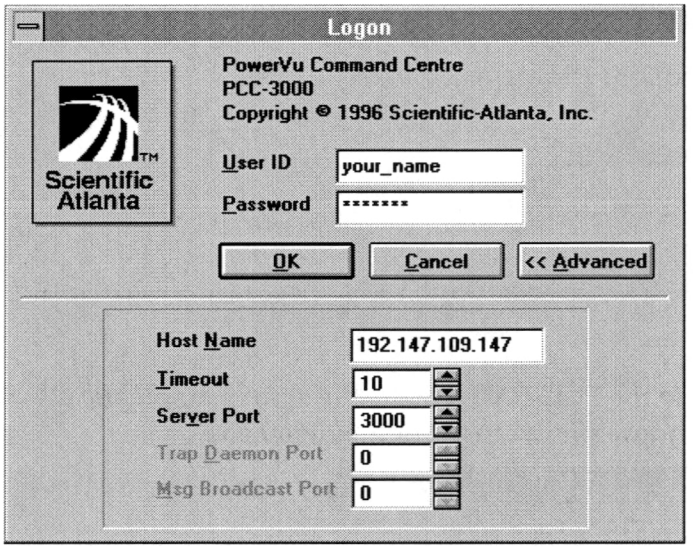
The system administrator may change your user name and/or system password at any time after system installation. These login parameters are set in the User Assignment window and can only be modified by a user with the required privilege authorization.

4. Once the main window is displayed, the system is ready for use. For information on how to control the system, see Chapters 3 to 10.

Advanced Logon Options

The Logon window offers advanced logon options which let you control the IP Address of your server and other communication characteristics. In most cases, your system administrator will advise you of the correct settings for the advanced options. To access advanced options:

1. Click **Advanced** on the original Logon window. The system displays:



2. Modify the advanced fields as required.
3. Click **OK** to logon to the PCC-3000 system.

User ID

Use this field to type in your User ID. The system administrator will provide you with your personal ID.

Password

Use this field to type in your PCC-3000 security password. The system administrator will provide you with your own password.

Host Name

IP Address of the PCC-3000 system server. Initially, this number is set by Scientific-Atlanta installation personnel, but can be changed by the customer at a later time.

Timeout ➢ 10

This field identifies the *heart beat/timeout* rate defined for the server. In order to check for inactive client computers, the server sends a request to each client computer at the end of the Timeout interval *if the server has not received a request from the client during the interval*. If the client responds, the server maintains the connection. If the client does not respond (i.e., the client PC has been turned off, the PCC-3000 application software has been closed), the server closes the connection to the client PC.

Server Port ➢ 3000

This field identifies the reserved port on the UNIX server. This value is set at the time of installation and should not be changed unless recommended by Scientific-Atlanta customer support personnel.

Trap Daemon Port

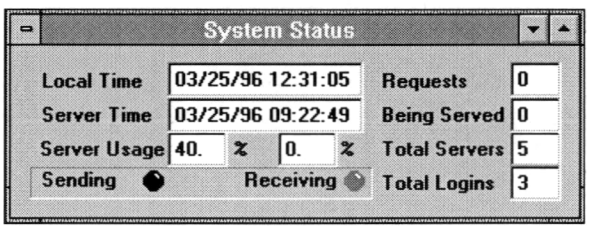
This field reserved for future use.

Msg Broadcast Port

This field reserved for future use.

System Status

After you log on to the PCC-3000 system, the system automatically displays a System Status window similar to the one shown here:



If for some reason, you closed the System Status window, select System Status from the Administration menu (or click the flashlight icon) to redisplay the window.

The System Status window provides you with the following information:

Local Time

The current date and time setting for the computer you are working on.

Server Time

The current date and time setting for the server (host) computer your system is linked to.

Note: All transactions that use system timing functions (e.g., date and time set), use the **server's** time clock, not the local PC's time clock.

Server Usage

The first field indicates the percentage of system resources being used by *all* users linked to this server.

The second field indicates the percentage of system resources being used by you at this computer.

Requests

Total number of requests created in the queue and currently awaiting processing by the system.

Being Served

Total number of requests being processed at this moment by the system.

Total Servers

Total number of servers currently in existence and available to the system.

Total Logins

Total number of users currently logged in *and using* the system.

Sending

Status light (green indicates active) indicating when the system is sending data.

Receiving

Status light (green indicates active) indicating when the system is receiving data.

Log off the PCC-3000 client system

It is a good practice to log off the system when you are through using it. This practice is recommended because:

- it helps prevent unauthorized users from accessing the system functions using your privileges
- it frees up system resources and enables the system to perform at maximum efficiency.

1. Update any changes you made to settings or modifications to the system.
2. Close all open windows.
3. Select Exit from the File menu, or click the Exit icon on the toolbar.

   The system cleans up any minimized windows, performs routine background maintenance functions and closes the main PCC-3000 window.

   Note: To restart the system on your PC, you need to follow the procedure outlined earlier in *Log onto the PCC-3000 system.*

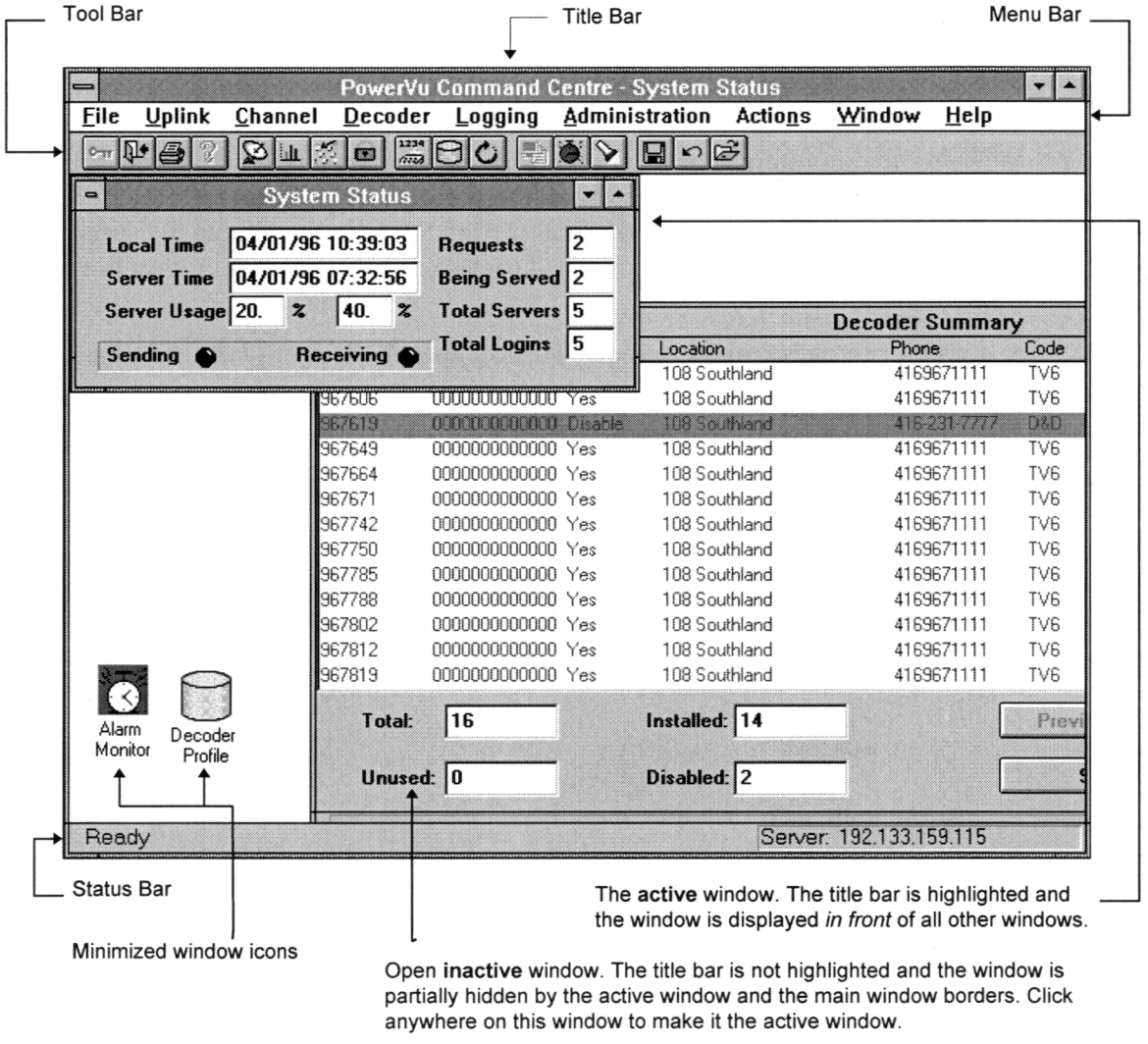
For related information, see *Application Note A, Types of System Shutdown.*

The PCC-3000 Main Window

Once you logon, the PCC-3000 system presents you with a main system window. Various sub-windows will be displayed within the main window depending on your menu choices and the tasks you need to perform. You use the sub-windows to view and control the different components and functions in the system.

Note: Except for *Chapter 11, Backup and Restore*, all transactions and system functions from here on in this manual will be described for the *client* computer (unless otherwise indicated).

The following illustration displays a representation of the main window, the various elements that are part of the main window, and some example sub-windows (both minimized and maximized) that you might see during actual operation.


Tool Bar
Title Bar
Menu Bar
PowerVu Command Centre - System Status
File Uplink Channel Decoder Logging Administration Actions Window Help
System Status
Local Time 04/01/96 10:39:03
Server Time 04/01/96 07:32:56
Server Usage 20. % 40. %
Sending Receiving
Requests 2
Being Served 2
Total Servers 5
Total Logins 5
Decoder Summary
Location Phone Code
967606 0000000000000 Yes 108 Southland 4169671111 TV6
967619 0000000000000 Disable 108 Southland 416-231-7777 D&D
967649 0000000000000 Yes 108 Southland 4169671111 TV6
967664 0000000000000 Yes 108 Southland 4169671111 TV6
967671 0000000000000 Yes 108 Southland 4169671111 TV6
967742 0000000000000 Yes 108 Southland 4169671111 TV6
967750 0000000000000 Yes 108 Southland 4169671111 TV6
967785 0000000000000 Yes 108 Southland 4169671111 TV6
967788 0000000000000 Yes 108 Southland 4169671111 TV6
967802 0000000000000 Yes 108 Southland 4169671111 TV6
967812 0000000000000 Yes 108 Southland 4169671111 TV6
967819 0000000000000 Yes 108 Southland 4169671111 TV6
Total: 16
Installed: 14
Unused: 0
Disabled: 2
Alarm Monitor
Decoder Profile
Ready
Server: 192.133.159.115
Status Bar
Minimized window icons
The active window. The title bar is highlighted and the window is displayed in front of all other windows.
Open inactive window. The title bar is not highlighted and the window is partially hidden by the active window and the main window borders. Click anywhere on this window to make it the active window.

Title Bar

The title bar contains the window control button on the left, the minimize/maximize buttons on the right, and the application's title in the middle of the bar. Note that the name of the active window appears in the title bar right after the words *PowerVu Command Centre*.

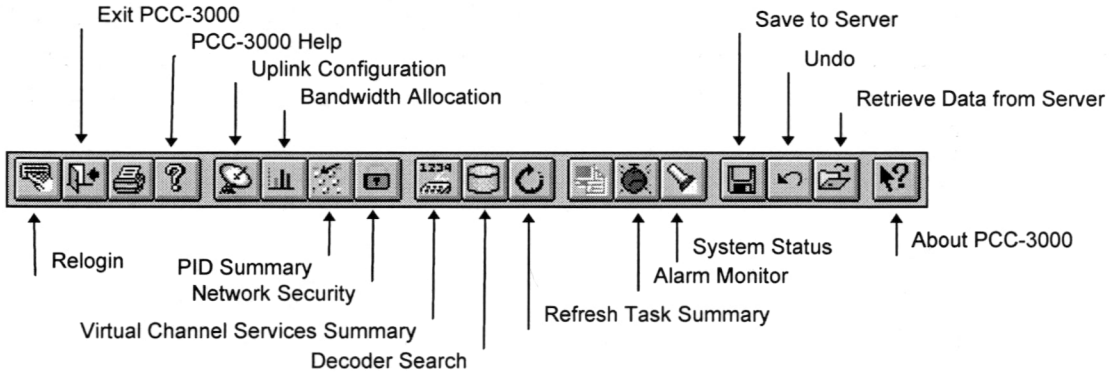
Menu Bar

The menu bar contains the pull-down menus for the system. For a brief description of each menu and menu item, see the topic *The Menus* later in this chapter.

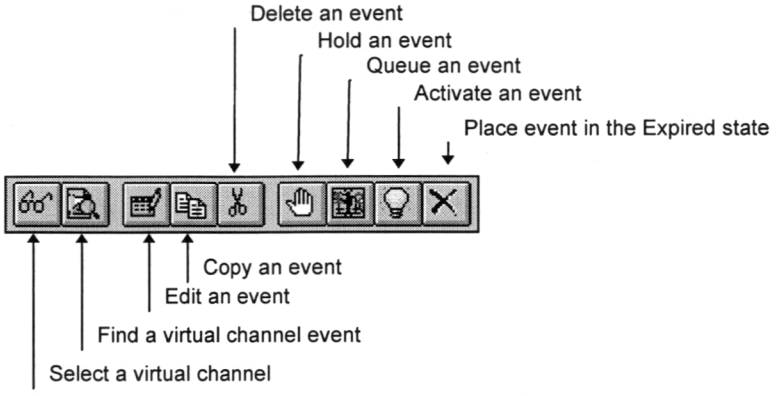
Toolbar

The toolbar contains icons which provide a short cut to many system windows and functions. Click on the icon to open the window or perform the function. If the icon is greyed out, it means the window or function is not available *at the current time*. Toolbar icons may become activated (or deactivated) depending on the currently active window.

If you forget what an icon does, place the mouse pointer over the icon for a moment and the system's built-in bubble help appears with a brief description of its function.



The above illustration represents the *standard* toolbar icons. Not only do toolbar icons become activated (or deactivated) depending on the currently active window, the available icons *change* depending on the active window. Additional icons may appear to the right of the standard icons. For example, the following icons appear when the Event Queue window is displayed.



Status Bar

The status bar provides you with certain types of system information:

- IP Address
- system activity status (e.g., searches)
- a mirror of the menus and menu items titles
- a mirror of the toolbar icon bubble help.

The Menus

The PCC-3000 system uses an arrangement of pull-down menus just below the title bar. Each menu can be accessed by a click of the mouse button, or by holding down the **Alt** key and simultaneously pressing the underlined letter on the menu name. For example, pressing **Alt+U** opens the Uplink menu and displays the menu item choices.

A brief description of each menu and menu item follows:

File

Relogin	Repeat your login to the PCC-3000 system
Print	*Function not available on this version*
Close	Close the active window
Exit	Close all windows and exit from the PCC-3000 system

Uplink

Uplink Configuration...	Open the Uplink Configuration window
Redundancy	Open the Redundancy dialog box
Network Security	Open the Network Security window
Frequency Summary	Open the Frequency Assignment List window
BandWidth Allocation	Open the Bandwidth Allocation window
Pid Summary	Open the PID Summary window

Channel

Service Summary ← Open the Service Summary window

Decoder

Add Decoder ← Add a decoder to the database
Decoder Database ← Open the Decoder Database Summary window
Decoder OS Download ← Open the OS Download window

Transmission

Refresh Task List ← Open the Refresh Task window (individual tasks)
Transmission Monitor ← Open the Transmission Control window

Logging

Alarm Monitor ← Open the Alarm Monitor window
Alarm History ← Open the Logged Alarm Search window
Transaction Monitor ← Open the Transaction Monitor window
Transaction History ← Open the Logged Transaction Search window

Administration

User Assignment ← Open the User window
Group Assignment ← Open the Privilege Group window
Customer Assignment ← Open the Customer window
Change Password ← Open the User Change Password window
System Status ← Open the System Status window

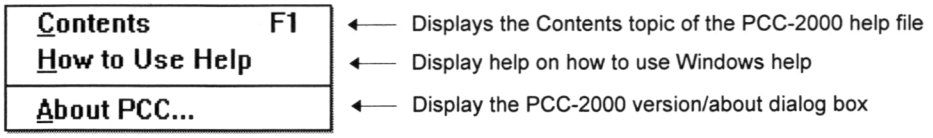
Actions

Menu items on the Actions menu vary depending on the active window. For details, see the individual topics for each window.

Window

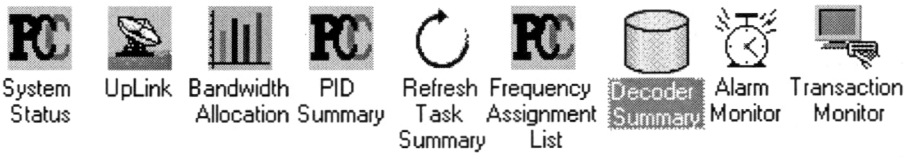
Cascade Shift+F5 ← Arrange all open windows so title bars overlap
Tile Horizontal Shift+F4 ← Position open windows side by side
Tile Vertical ← Position open windows on top of each other
Arrange Icons ← Arrange closed window icons along bottom of screen
Close All
1 System Status
2 Service Summary
3 Bandwidth Allocation
✓4 Alarm Monitor
← Displays all open/minimized windows. The check mark indicates the active window.

Help


Contents F1
How to Use Help
About PCC...
Displays the Contents topic of the PCC-2000 help file
Display help on how to use Windows help
Display the PCC-2000 version/about dialog box

Minimized Window Icons

If an open window is minimized, an icon appears at the bottom of the main window to indicate and remind you that the window is still open. Some of the icons for reduced windows appear in the illustration below. To maximize a window, double click on its icon.



Alarm Monitor icon

The Alarm Monitor icon changes color if there has been an alarm event since the window was reduced.

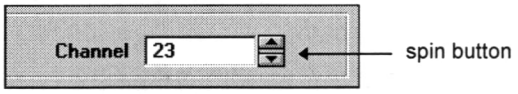
Yellow = **WARNING**

Red = **FAIL**

The icon color remains at the most severe setting until the alarm state has been reset, or you maximize the Alarm Monitor window.

Spin buttons

Many editable fields contain a controller called a *spin button*. For example, the spin button illustrated below enables you to adjust the homing channel number on the Decoder Profile window.

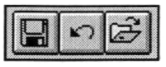


The spin button can be used in two ways:

First, click on the upper arrow to increase the field value by one, or click on the lower arrow to decrease the field value by one.

Second, position the cursor on top of the spin button until the cursor changes to ⇳, then click the left mouse button and drag the cursor up ⇪ to increase the field value, or down ⇩ to decrease the field value. The farther you drag the cursor away from the field the faster the value increases or decreases.

Save, Undo, Refresh Actions



The following actions are usually always available when a PCC-3000 window is displayed. Each action is normally accessible from the Actions menu or from a toolbar icon.

Save/Update

Use this function to update the database with any changes made in the active window. Each time you make a change to the information in PCC-3000 that you want to make permanent, you need to click this icon on the toolbar, or select Update from the Actions menu.

Undo

Use this function to abort any changes made to the active window and return to the previous values. This function is only usable if changes have not been saved by selecting the Update function. If you want to undo any changes, click this icon, or Select Undo from the Actions menu.

Refresh

Use this function to retrieve current information from the database. This function *refreshes* the active window and populates it with data from the server. The Inquiry function provides a way to refresh the information on screen so that you are always working with current data in the active window.

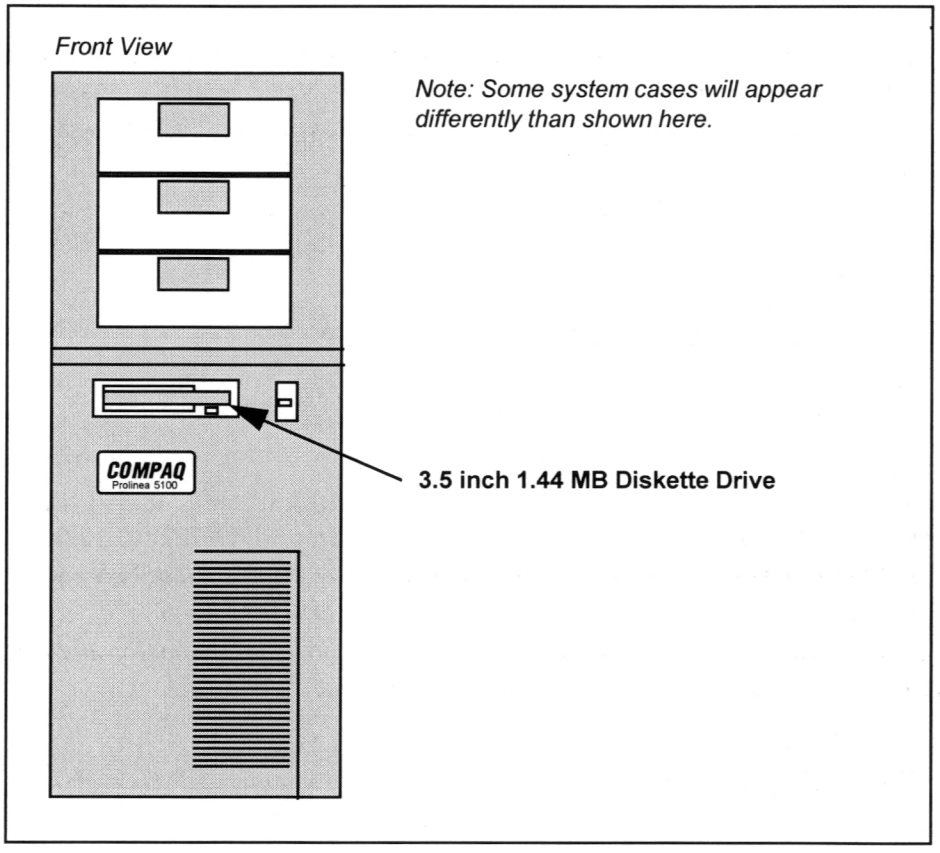
For example, you may be working in a session in which you have *multiple* windows open. Although two or more windows may be open, it is only the *active* window that benefits from the effects of the Refresh function. When you return to an open window that was **not** the active window (or a window that has been open for a long time with no activity), it is a good practice to routinely refresh the window to ensure that the information displayed is always the most up-to-date.

If you want to refresh the window, click this icon, or select Refresh from the Actions menu.

If you have set the auto-refresh feature to **ON**, this action will not be necessary. For details on setting auto-refresh, see *Chapter 3,* in the topic *Uplink Configuration*.

Client Computer Configuration

To perform PCC-3000 client control functions, you'll need a COMPAQ ProLinea 5133 computer (or equivalent) equipped with a 3.5 inch, 1.44 MB floppy disk drive. The figure below shows a standard COMPAQ ProLinea 5133 computer. However, your computer system may not be equipped as shown. Please note the differences between your computer and that illustrated (e.g., number of diskette drives, etc.).


Front View
Note: Some system cases will appear differently than shown here.
COMPAQ
Prolinea 5100
3.5 inch 1.44 MB Diskette Drive

COMPAQ Prolinea 5100 Computer - Generalized Front View

Memory Requirements

To function with maximum effectiveness, the client computer should be equipped with 16 megabytes of RAM, and a virtual memory setting (Windows swap file) of 24 megabytes.

COMPAQ Keyboard

The PowerVu Command Centre 3000 hardware platform consists of a COMPAQ ProSignia 300 server and a COMPAQ ProLinea 5133 client (or equivalent computers). The computers with their monitors and keyboards are used as the control computers for the PCC-3000 system.

Please note that there may be function and key differences between one type of manufacturer's computer keyboard and another. All keyboard references in this manual are made with the assumption that the keyboard in use is an IBM-style enhanced keyboard.

The COMPAQ keyboard is a standard 101-key IBM enhanced keyboard. The keyboard is divided into four keypads:

- Main Keypad
- Editing Keypad
- Numeric Keypad
- Function Keys and Visual Indicators Keypad

Main Keypad

The Main Keypad is used for entering letters and numbers. It also contains the **Enter** key, **Tab** key, **Backspace** key, **Space Bar**, and **Shift** key. Refer to your COMPAQ manual for an explanation of the keys on the Main Keypad.

Editing Keypad

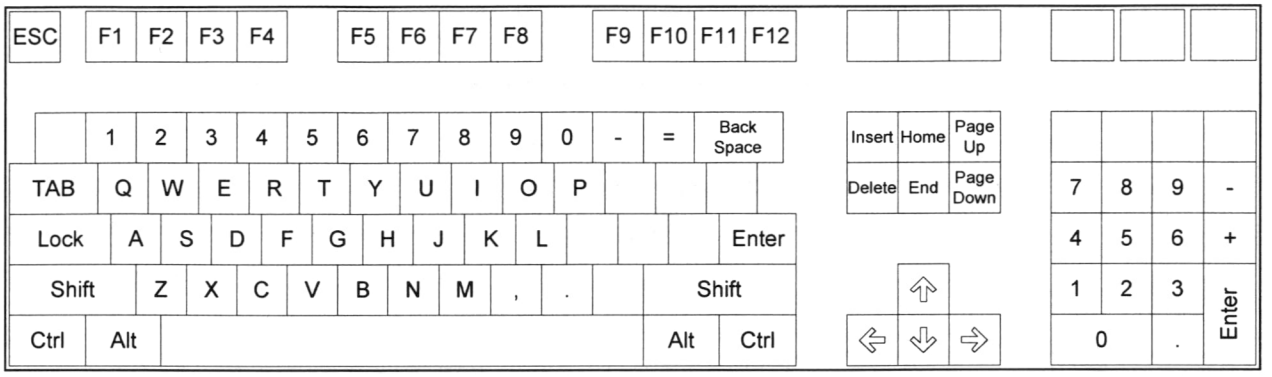
The Editing Keypad contains the cursor control arrows as well as the following keys used by the PCC-3000 system: **Page Up (Prev Screen)**, and **Page Down (Next Screen)**.

Numeric Keypad

The Numeric Keypad contains numeric keys and the **Enter** key. You may use either the numeric keys on the Main Keypad or the numeric keys on this keypad when entering numbers in the system.

Function Keys and Visual Indicators Keypad

The Function Keys and Visual Indicators Keypad contains the function keys and status indicators. These indicators display the status of the terminal. On the IBM enhanced keyboard these include **Caps Lock, Scroll Lock** and **Num Lock**.


ESC
F1 F2 F3 F4
F5 F6 F7 F8
F9 F10 F11 F12
1 2 3 4 5 6 7 8 9 0 - = Back Space
TAB Q W E R T Y U I O P
Lock A S D F G H J K L Enter
Shift Z X C V B N M , . Shift
Ctrl Alt Alt Ctrl
Insert Home Page Up
Delete End Page Down
7 8 9 -
4 5 6 +
1 2 3 Enter
0 .

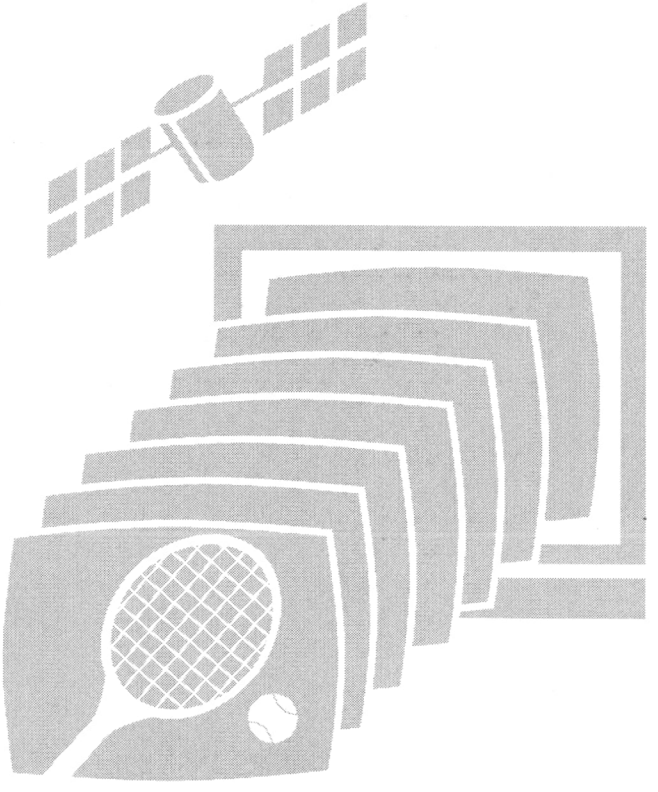
IBM Enhanced Keyboard

The following table provides a description of the keys used to move within windows, call certain functions and enter information in the PCC-3000 system.

Key	Description
Enter	The Enter key is used to accept the values in a window and activate the window button which currently has the window's focus. For example, if the **OK** button has the focus, pressing Enter is the same as clicking **OK** to accept the values and close the window.
↓	In a numeric or date field, the Down Arrow key reduces the value by one with each key press. Holding the key down will rapidly reduce the value in high speed fashion – much like holding the space bar down in order to pad a line with spaces. In a field with preset field options, the Down Arrow key lets you move down through the option list by one option with each key press. In a character entry field, the Down Arrow key functions exactly like the Left Arrow key.
↑	In a numeric or date field, the Up Arrow key increases the value by one with each key press. Holding the key down will rapidly increase the value in high speed fashion – much like holding the space bar down in order to pad a line with spaces. In a field with preset field options, the Up Arrow key lets you move up through the option list by one option with each key press. In a character entry field, the Up Arrow key functions exactly like the Right Arrow key.
←	The Left Arrow key moves the cursor left one character.
→	The Right Arrow key moves the cursor right one character.
Insert	The Insert key allows you to enter text data either before or after text data characters currently in a field or to overwrite text with new text data. Toggle between insert and overwrite modes by pressing the Insert key.
End	The End key lets you move directly to the end of a line or the characters in a field.
Home	The Home key lets you move directly to the beginning of a line or the characters in a field.
Page Up	The Page Up key displays the previous screen on the current window. The Page Up key can be used whenever scroll bars appear on the right hand side of the active window.
Page Down	The Page Down key displays the next screen on the current window. The Page Down key can be used whenever scroll bars appear on the right hand side of the active window.
Tab	The Tab key moves the cursor to the next editable field on the screen.

Key	Description
F1	The F1 key displays context sensitive help for the active window when it is pressed.
F4	The F4 key calls the Edit function. F4 is equivalent to selecting Edit on the Actions menu, or clicking the icon on the toolbar.
F6	The F6 key calls the Update (Save to Server) function. F6 is equivalent to selecting Update on the Actions menu, or clicking the icon on the toolbar.
F7	The F7 key calls the Retrieve Data from Server function. F6 is equivalent to selecting Refresh (or Inquiry) on the Actions menu, or clicking the icon on the toolbar.
F8	The F8 key calls the Undo function. F8 is equivalent to selecting Undo on the Actions menu, or clicking the icon on the toolbar.
F9	The F9 key calls the Previous function. F9 is equivalent to selecting Previous on the Actions menu, or clicking the icon on the toolbar.
F10	The F10 key calls the Next function. F10 is equivalent to selecting Next on the Actions menu, or clicking the icon on the toolbar.
Ctrl	The Control key (in combination with the left mouse button) is used to select additional items from any list that lets you choose more than one item. To deselect an item, simply hold down the Ctrl key and click on the item you want to deselect.
Ctrl + Insert	The Control key **plus** the Insert key calls the Copy function. Holding down Ctrl and pressing Insert is equivalent to selecting Copy on the Actions menu, or clicking the icon on the toolbar.
Ctrl + Delete	The Control key **plus** the Delete key calls the Delete function. Holding down Ctrl and pressing Delete is equivalent to selecting Delete on the Actions menu, or clicking the icon on the toolbar.
Shift	The Shift key (in combination with the left mouse button) is used to select a range of items from any list that lets you choose more than one item. Click on the first item, move the cursor to the last item, hold down the Shift key and click the mouse button. All items between mouse clicks will be selected.
Alt	The Alt key (in combination with the *underlined* letter on pull-down menus, menu options, and many buttons on the PCC-3000 windows) provides you with a shortcut to many commands and functions.

Chapter 3 UPLINK CONFIGURATION



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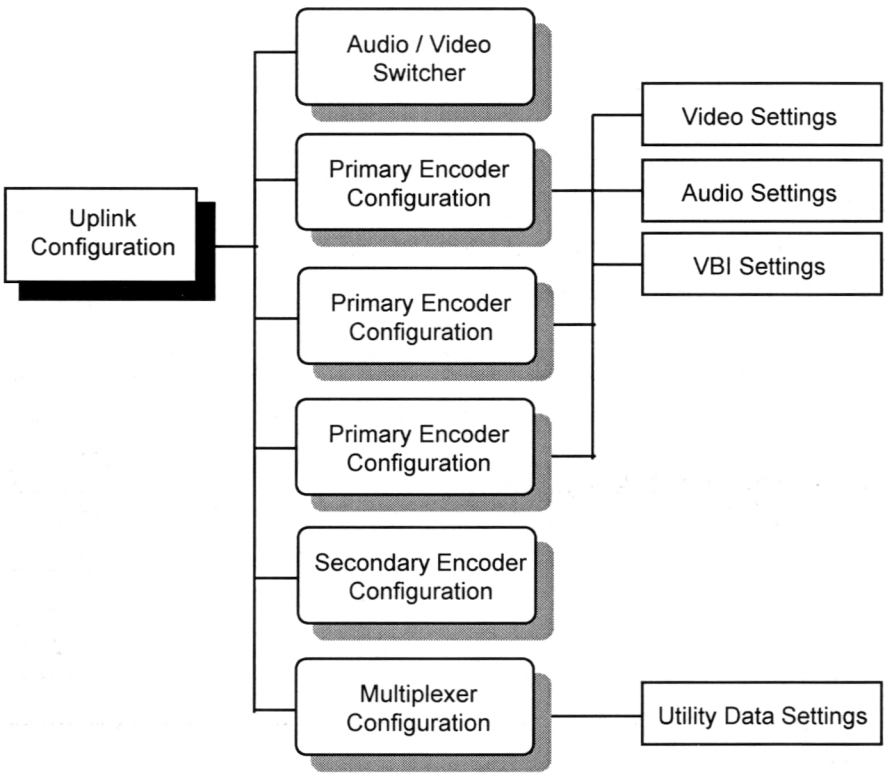
Introduction

The Uplink Configuration window is used to alter the operating characteristics of the uplink system and to control the devices configured to transmit digital video and audio via the associated transponder.

The Uplink Configuration window is the major entry point for system control. The following diagram illustrates the main control windows available from the Uplink Configuration window.

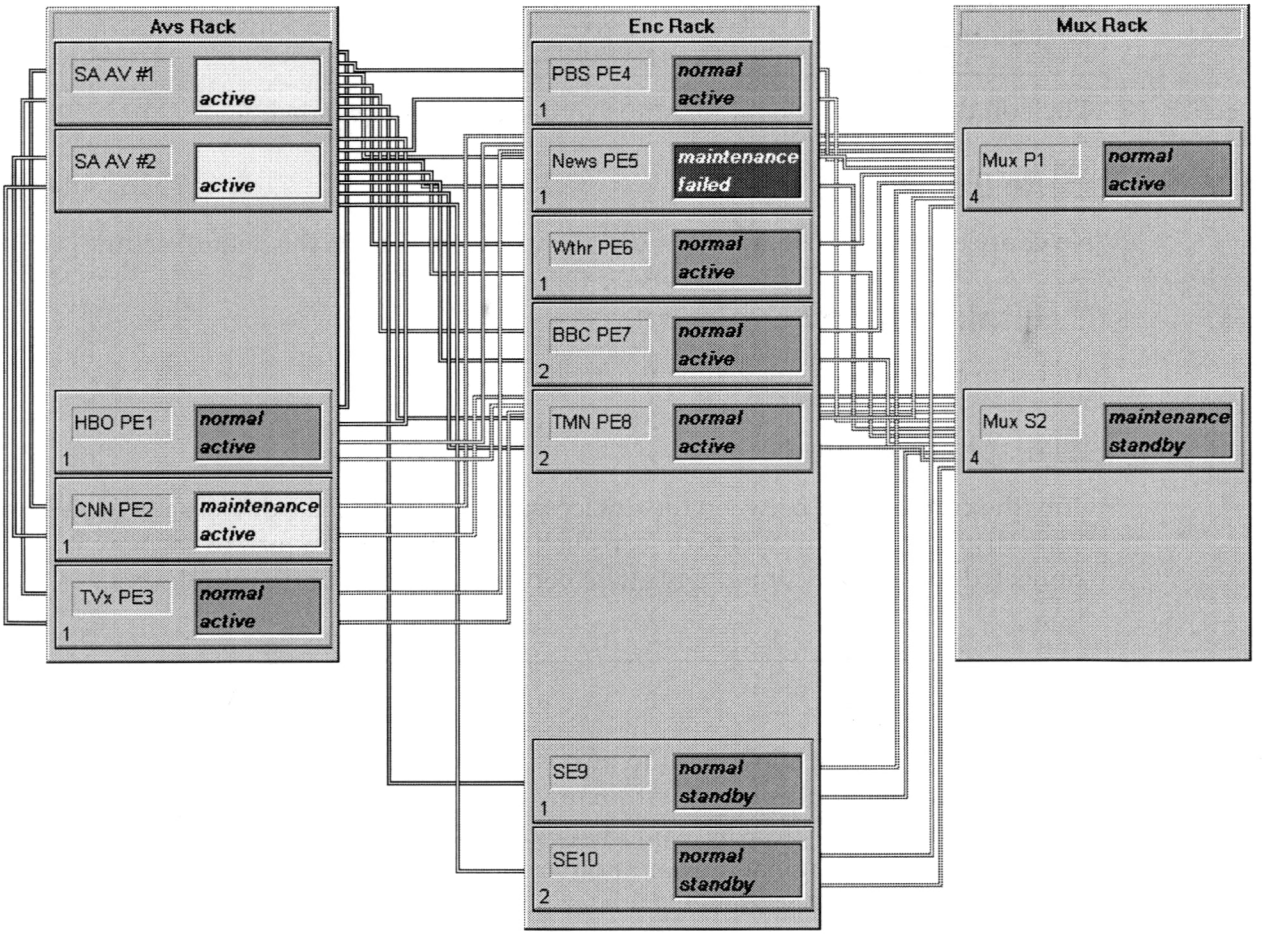


Uplink Configuration

The Uplink Configuration window allows you to control:

- the operating parameters for each card within each device
- the operating state and mode for each device
- the connection information and refresh rate for displayed system data.

To access the Uplink Configuration window, select Uplink Configuration on the Uplink menu. The window is arranged as a representational display of the physical elements in your PCC-3000 system (i.e., one rack represents the audio/video switchers, one rack represents the primary and secondary encoders, and one rack represents the primary and secondary multiplexers).



Uplink Configuration Representation

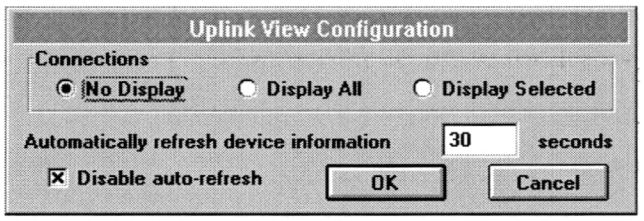
Teleport/Administrator	Programmer/Customer
Able to view and access complete system	May be able to view and access encoders and shared multiplexers. Degree of access and functionality depends on Privilege Assignments.

Connections between racks and devices

The Uplink Configuration window can display the connections between the different devices in each rack (i.e., A/V switchers, encoders and multiplexers).

A blue connector line indicates a coaxial cabling connection between the A/V switcher and the encoder. A pink connector line indicates a fiber connection between the encoder and the multiplexer.

To control the display of connections, select Configure from the Actions menu, or double click anywhere in the Uplink Configuration window *except* on the device racks. The system displays:



Click on the appropriate radio button in the Connections panel.

No Display ➢ ON

No connections are displayed between any devices. This is the default setting.

Display All

All connections are displayed between all installed devices.

Display Selected

Only the connections between the device you click on and the devices it's connected to are displayed. In this view you can click on each device in turn to see how it's connected to its other components (i.e., between encoders and multiplexers).

Drag and drop devices

The PCC-3000 system allows you to re-position a device's representation (A/V switcher, encoder, multiplexer) within any rack. To move a device, click and hold the left mouse button anywhere on the device panel area and drag the device to its new position in its original rack or another rack. The system retains the new device position until it is re-positioned at a later time.

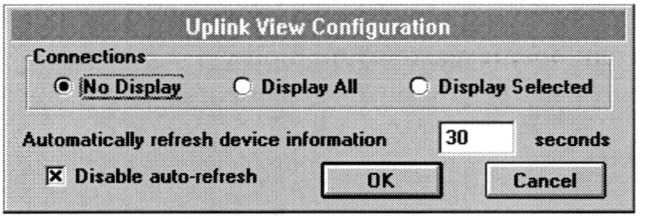
You can also use drag and drop to manually control the redundancy/replacement of a particular device. For details, see the topic, Redundancy Control later in this chapter.

Drag and drop racks

The PCC-3000 system allows you to re-position a rack (and all the devices assigned to it) anywhere within the Uplink Configuration window. To move a rack, click and hold the left mouse button anywhere on the rack's panel area (but not on a device) and drag the rack to its new position in the window. The system retains the new rack position until it is re-positioned at a later time.

Refresh Uplink Configuration data

The PCC-3000 system allows you to control the rate at which device information is refreshed on the Uplink Configuration window. To modify the screen data refresh rate, double click anywhere in the Uplink Configuration window *except* on the racks. The system displays:



Automatically Refresh Device Information ➤ 30

Type in a value between **1** and **99999** seconds. As a general rule, a setting of **30** seconds provides you with a good, regular poll of device information without straining system resources.

Note: If you are communicating with your server by modem, the refresh value should be greater than the heart beat/timeout setting on the PCC-3000 Logon window. A recommended setting for modem communication is a timeout rate of 120 seconds and a refresh setting of 150 seconds (or more).

Disable Auto-Refresh ➤ ON

If you wish to disable the automatic refresh feature, click on the Disable Auto Refresh check box so that it contains a check mark (i.e., set to **ON**).

If you want to enable the automatic refresh feature, click on the check box so that it is blank (i.e., set to **OFF**).

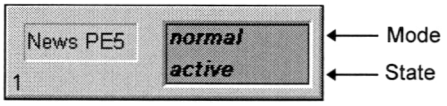
Operating status color codes

Each device's operating status is identified by a particular color. The color appears in the status panel area of the device and the displayed color depends on a combination of the device's operating state and operating mode.

Color	Status	Color	Status
Green	Active/normal	Black	Offline
Yellow	Maintenance	Red	Failed

Operating states for A/V switchers, encoders and multiplexers

The audio/video switchers, the primary and secondary encoders and the multiplexers contain a settable *state* option. The status panel area within each device indicates the device's current operating state and mode.



The encoders and multiplexers can display any of the following states: **Active**, **Standby**, **Offline** or **Failed**. The audio/video switcher connected to the PCC-3000 system via the RS-232 interface will only display the **Active** or **Offline** state.

Primary and secondary encoders and multiplexers can operate in any of the following states:

State	Description
Active	Active indicates that the data paths are operating normally. If the system fails, you can force a retry of the data path by changing the status to **Active**. This unit is the one being used for broadcast purposes.
Standby	Standby indicates that the system and virtual channel data paths are operating normally for the unit designated as the standby encoder.
Offline	Offline indicates communication with the encoder has stopped. This is generally used for encoder maintenance and stops the reporting of diagnostics messages for this unit. It also disables the transmission of virtual channel EMMs.
Failed	Failed is set by the PCC-3000 system software because of a failure in the encoder. This indicates communication has stopped between the PCC-3000 system and the encoder (e.g., due to a cable problem or a power supply failure).

You can select any one of the first three states: **Active**, **Standby** and **Offline**. The **Failed** state is set by the PCC-3000 system.

Note: When microcode is being downloaded to a primary or secondary encoder, the state must be set to **Offline**. Refer to the *Encoder Configuration window* for more information.

For example, the **PBS PE4** encoder shown in the Uplink Configuration illustration is operating in the active state. Under normal operation, all primary operating

encoders connected to the system should be in the **Active** state and the secondary encoders in **Standby** state (in a redundant system only).

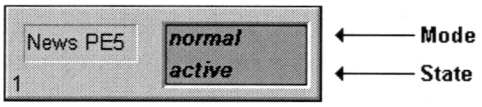
If a communications failure occurs or an error is reported to or detected by the PCC-3000 system, the system indicates the type of failure. The system continuously monitors the communication paths between the components of the system and attempts to recover automatically from communication failures and other malfunctions. If for example, communication fails between the PCC-3000 system and the encoder, but the system is able to recover, the system resets the path to **Active**. You can force a retry to re-establish communications with a device by setting the path to **Active**.

The communication path between the PCC-3000 system and uplink equipment can also be set to **Offline** for maintenance purposes. This causes the PCC-3000 system to ignore any communications between itself and the equipment set **Offline**. It remains in the **Offline** state until the operator sets it to **Active**.

Note: In order for any status changes to take effect, you must select Update from the Actions menu (or click the Update button icon) *if the auto-refresh feature is set to **ON***. Otherwise, the system will reset the status on the next refresh cycle.

Operating modes for encoders and multiplexers

The primary and secondary encoders and the multiplexers contain a settable *mode* option. The status panel area within each device indicates the device's current operating state and mode.



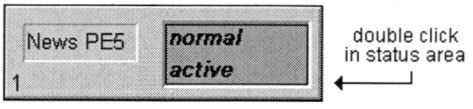
You can select one of two operating modes for encoders and multiplexers – **Normal** or **Maintenance**.

Mode	Description
Normal	**Normal** mode indicates that no major errors have occurred in the encoder since the operator or PCC-3000 system placed the encoder in the Normal mode.
Maintenance	**Maintenance** mode indicates that at least one major error has occurred in the encoder since it was in Normal mode. An encoder remains in Maintenance mode until the operator places it in Normal mode. If a major error exists in the encoder, it automatically changes to Maintenance mode to indicate a major problem.

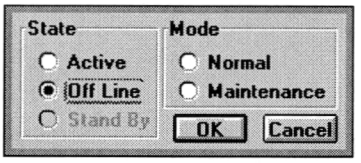
Note: When microcode is being downloaded to a primary or secondary encoder, the state must be set to **Offline**. Refer to the *Encoder Configuration window* for more information.

How to modify the operating state and mode

1. Double click anywhere in the device's status panel area.



The system displays:



2. Click on a radio button to select a particular mode or state.
3. Click **OK**.
4. Select Update from the Actions menu (or click the Save to Database button) for the status change to take effect. Otherwise, the system will reset to the previous status on the next refresh cycle.

Uplink Configuration Actions

The following actions are available when the Uplink Configuration window is displayed. Each action is accessible from the Actions menu or from a toolbar icon.

Update

Select Update from the Actions menu to update the database with any changes made on this window.

Undo

Select Undo from the Actions menu to abort any changes made to the window and return to the previous values. Only usable if changes have not been saved by selecting Update.

Refresh

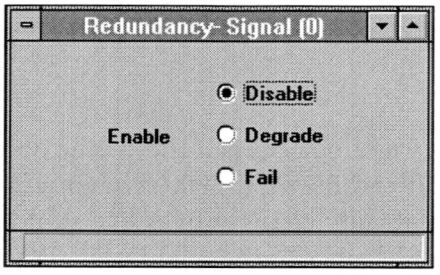
Select Refresh from the Actions menu to retrieve current information from the database. The Refresh function provides a way to refresh the information on screen so that you are working with current data in the active window.

If you have set the auto-refresh feature to **ON** using the Uplink View Configuration window described earlier in this topic, this action will not be necessary.

Redundancy Control

Use this window to control the PCC-3000 redundancy switching (auto-changeover).

To access the Redundancy control window, select Redundancy from the Uplink menu. The system displays:



Teleport/Administrator	Programmer/Customer
Privilege – Available as setting applicable to complete system	*Privilege* – Recommend this feature not be made available to customers.

Title Bar

The title bar identifies the signal number that will respond to these redundancy settings.

Note: This version of PCC-3000 only supports one signal. Future versions will support multiple signals.

Disable ➢ ON

Disable indicates that the system does not automatically change over if a primary unit failure occurs. This is the normal (default) state in a nonredundant system, where a standby system is not available for backup. If the operator selects a standby unit which is in an operating state inferior to the failed unit, the PCC-3000 system allows the selection. For example, if the state of the failed unit changes state to **Standby** in **Normal** mode, the PCC-3000 system allows the operator to select a standby unit with a state of **Standby** in **Maintenance** mode.

Degrade

Degrade indicates that a primary-to-secondary switch occurs on or during an error within the primary unit, but that communication *still exists* between the failed unit and the PCC-3000 system. If a primary unit failure occurs, the failed unit automatically changes over to standby only if the standby unit is in a superior operating state.

For example, if the failed unit changes state to **Standby** in **Maintenance** mode, the PCC-3000 system selects a standby unit which is in the **Standby** state in **Normal**

mode. If the operator selects a standby unit which is operationally inferior to the failed unit, the PCC-3000 system selects another standby unit.

In the above example, if the operator-selected standby unit is in any of the following states/modes, the PCC-3000 system selects another standby unit:

- **Standby** in **Maintenance** mode
- **Failed** in **Normal** mode
- **Failed** in **Maintenance** mode.

Fail

Fail indicates that a primary-to-secondary switch occurs if there is a complete loss of communication between the primary unit and the PCC-3000 system. If a primary unit failure occurs, the failed unit automatically changes over to a standby unit only if the standby unit is in an operating state *superior* to the failed unit. For example, if the state of the failed unit is in a **Failed** state in **Maintenance** mode, the PCC-3000 system can switch to a standby unit which is in either **Standby/Normal** or **Standby/Maintenance** state/mode. If the operator selects a standby unit which is operationally inferior to the failed unit, the PCC-3000 system does not allow selection of the chosen standby unit.

Redundancy Groups and Primary/Secondary Designations

During system installation, the primary and secondary encoders and multiplexers are grouped together by alphanumeric codes to identify linked units for the purpose of changeover/redundancy. In addition, each encoder or multiplexer is designated as either a primary or a secondary, also at the time of setup.

This information is stored in the database and is defined during setup.

This redundancy group linking information is viewable but not modifiable by the operator. The number in the lower left hand corner of each encoder and multiplexer indicates the redundancy group that the device belongs to (in terms of chassis design).

Auto-changeover

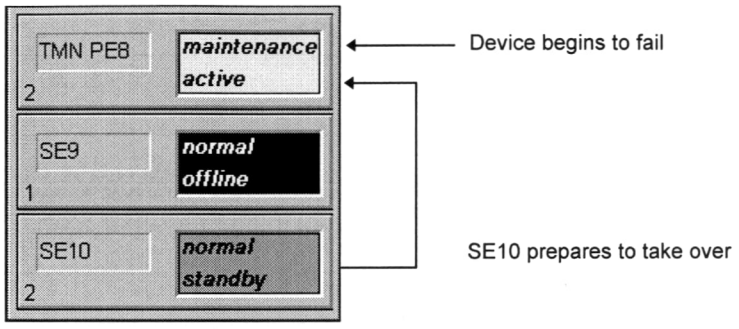
If a situation occurs in which changeover is required, the system automatically changes to the best choice among encoders and/or multiplexers. This changeover status is displayed on each device, as the following example demonstrates.

Note: Changeover priority codes can be set for each encoder. For details, see the topic *Encoder Configuration* later in this chapter.

Before changeover

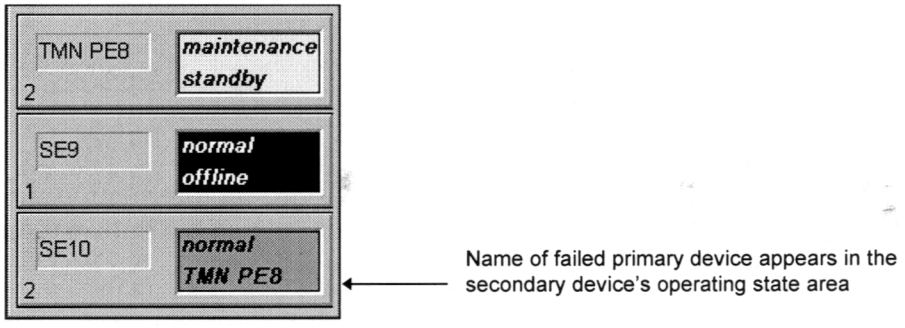
Primary encoder 8 (assigned to The Movie Network) begins to fail. The secondary encoder (SE10) in the redundancy group prepares to take over broadcast functions.

Note that all encoders in this group display the number **2** in the lower left hand corner of the device.



After changeover

After changeover occurs, primary encoder 8 (TMN PE8) is placed in the Standby or Offline state and the secondary encoder now performs the encoding functions. Note that the name of the failed device (TMN PE8 in this example) now appears in the secondary encoder's status area to indicate that it has taken over the primary encoder's functions.



Manual changeover

Alternatively, the PCC-3000 system allows you to manually changeover devices instead of waiting for the automatic redundancy feature to activate. This might be required in situations where a device has not failed but is behaving erratically, and needs to be taken off-line for servicing or calibration.

To changeover devices manually, click and hold the left mouse button anywhere on the replacement device and drag the device *on top* of the device you want to replace.

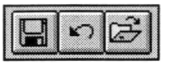
In the above illustrations used to explain autochangeover, if you were to changeover the devices manually, you would drag the **SE10** encoder and place it on top of the **TMN PE8** encoder.

The system sets the state of the replaced device to **Standby** or **Offline** and sets the replacement device as **Normal/Active**. The system retains the new setting until it is redefined at a later time.

Likewise, you can use the drag and drop feature to changeover a secondary device with a primary device. For example, once the **TMN PE8 encoder** is functioning

properly you can drag it on top of the **SE10** encoder to reset the system as it once was.

Redundancy Control Actions



The following actions are available when the Redundancy window is displayed. Each action is accessible from the Actions menu or from a toolbar icon.

Update

Select Update from the Actions menu to update the database with any changes made on this window.

Undo

Select Undo from the Actions menu to abort any changes made to the window and return to the previous values. Only usable if changes have not been saved by selecting Update.

Refresh

Select Refresh from the Actions menu to retrieve current information from the database. The Refresh function provides a way to refresh the information on screen so that you are working with current data in the active window.

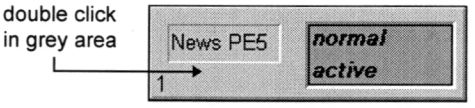
If you have set the auto-refresh feature to **ON** using the Uplink View Configuration window described earlier in this topic, this action will not be necessary.

Audio/Video Switcher Configuration

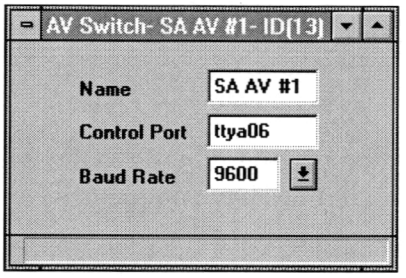
Use this window to:

- select the control port and baud rate for the communication link (port) between the audio/video switcher and the PCC-3000 system
- modify the name assigned to the switcher.

To access the Audio/Video Switcher Configuration window, double click anywhere on the AVS device panel *except* in the status area displaying the operating state and mode.



The system displays:



Teleport/Administrator	Programmer/Customer
Privilege – Available for complete system.	*Privilege* – Recommend this feature not be made available (or read only).

Title Bar

The title bar identifies the audio/video switcher's name and number and its ID within the PCC-3000 system.

Name

Use this field to set the name (maximum 8 characters) of the audio/video switcher.

Control

Use this field to set the PCC-3000 system port for communication with the audio/video switcher. Enter the name of the port corresponding to the RS-232 connection.

Baud Rate ➢ 9600

Use this field to set the baud rate for communication with the audio/video switcher. Select a baud rate setting in the range from **0** to **38400** baud. This setting must match the baud rate selected on the audio video switcher's control panel.

Audio Video Switcher Actions

The following actions are available when the Audio/Video Switcher window is displayed. Each action is accessible from the Actions menu or from a toolbar icon.

Update

Select Update from the Actions menu to update the database with any changes made on this window.

Undo

Select Undo from the Actions menu to abort any changes made to the window and return to the previous values. Only usable if changes have not been saved by selecting Update.

Refresh

Select Refresh from the Actions menu to retrieve current information from the database. The Refresh function allows you to refresh the information on screen so that you are always working with current data in the active window. This feature is especially useful in multiple-user systems where two or more database modifications and updates might be underway simultaneously.

If you have set the auto-refresh feature to **ON** using the Uplink View Configuration window described earlier in this topic, this action will not be needed.

Encoder Configuration

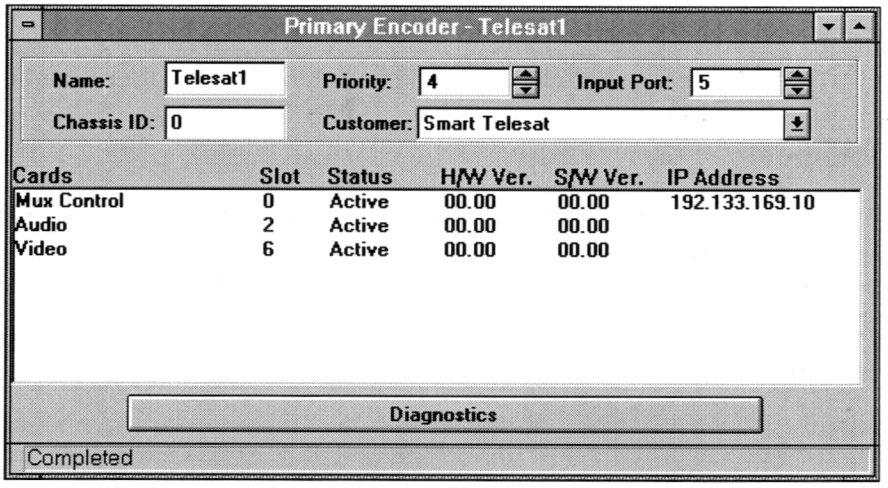
Use this window to:

- define an encoder's input port and device priority with respect to other encoders in the system
- access the video, audio and VBI configuration windows where data parameters must be set for each card
- access the encoder's diagnostic messages window
- modify the name assigned to the encoder.

Because all encoders are configured in a similar manner, only one example is described here.

Note: It is possible to keep each encoder's configuration window open (or minimized) for convenience while making large scale changes to many encoders. This enables you to compare the settings for each encoder and modify them as required.

To access an Encoder Configuration window, double click anywhere on the encoder device panel *except* in the status area displaying the operating state and mode. The system displays:



Teleport/Administrator	Programmer/Customer
Privilege – Available for complete system.	*Privilege* – Customer may or may not be allowed to view/edit the Encoder Configuration window, depending on how the Administrator wants to operate the system.

Title Bar

The title bar identifies the encoder type and the name assigned to the encoder.

Name

Use this field to set the name (maximum 8 characters) of the encoder.

Priority ➤ 4

Use this field to set the encoder priority for autochangeover to a standby encoder in case the encoder fails. Enter a decimal value from **0** to **127** (or use the spin button) to indicate the priority. The lower the number, the higher the priority. For example, if encoders 1 and 2 both fail and their priorities are set at 50 and 100 respectively, **and** only one standby encoder is available, encoder 1 will have priority and switch to the standby encoder *of the same type*. The standby encoder must be configured as **Standby** and Autochangeover *cannot* be **Disabled**.

Input Port ➤ 5

Use this field to set the PCC-3000 system port for communication with the encoder. The input port refers to the AVS input port. Enter the number of the port that corresponds to the RS-232 connection.

Chassis ID

This read-only field identifies the ID number set for the encoder. At the time of installation, S-A installation personnel assign each encoder a unique hexadecimal number (from **01** to **FF**) which the PCC-3000 system uses for identification.

Customer

Use this field to select the customer name you want to associate with the encoder.

Note: To ensure that bandwidth allocations are not violated, the PCC-3000 software does not allow the Customer field on an encoder to be changed unless the bitrate used by the encoder is **zero**. This means, when you want to change the ownership of an encoder, that all the bitrates for its channels must be set to zero, and all services that use that encoder (on all virtual channels) must be disabled.

Encoder Cards

For each card in the encoder, the following parameters are displayed:

Slot – slot number within the chassis

Status – can be any of the following:
Active, Failed, Maintenance, Offline, Not Exist, Reset, Error

H/W Version – hardware version of the card

S/W Version – software version of the card

IP Address – encoder address (Internet protocol) for communication with the encoder

Depending on the hardware configuration, an encoder can contain some or all of the cards listed below.

Mux Control

The Mux Control card is used when multiple audio and video signals must be phased locked and time locked to a common frequency reference.

This card's operating parameters are preset and cannot be changed. This row displays view-only data.

Video

The Video encoder card is used to compress a single channel from either a 525-line (NTSC) or 625-line (PAL) source.

This row provides access to the *Video Card* configuration window where you set the operating parameters for the selected video channel. Double click anywhere on the row and the system displays the *Video Card* configuration window. This window is discussed in a following topic.

Audio

The Audio encoder card provides real-time encoding of up to four audio channels using the MPEG 1 Layer 2 encoding algorithm. All defined MPEG compression data rates and sample rates are supported.

This row provides access to the *Audio Card* configuration window where you set the operating parameters for the selected audio channels. Double click anywhere on the row and the system displays the *Audio Card* configuration window. This window is discussed in a following topic.

VBI

The VBI card is used to reprocess embedded video signal information extracted during the Vertical Blanking Interval, and then merge the encoded data from the MPEG 2 transport stream into the outgoing video signal.

This row provides access to the *VBI Card* configuration window where you set the operating parameters for the selected VBI channel. Double click anywhere on the row and the system displays the *VBI Card* configuration window. This window is discussed in a following topic.

Encoder Configuration Actions

In addition to the standard Update, Undo and Refresh actions, the following actions are available when the Encoder Configuration window is displayed.

Edit

To edit a card within the encoder chassis, double click on the card's row, or highlight the card row and select Edit from the Actions menu.

Diagnostics

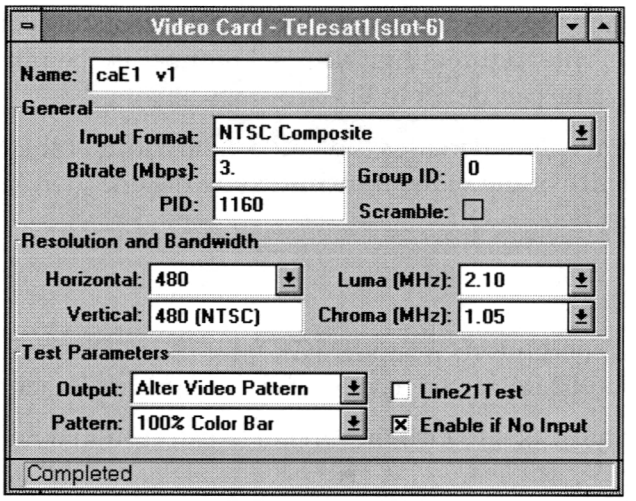
Click the **Diagnostics** button to display diagnostic information for this encoder. The system displays the Diagnostics window. For details, see *Chapter 7, Transaction and Alarm Logs* in the topic *Encoder Diagnostics*.

Note: This button is only activated if the encoder is in the **Active** state.

Video Card Configuration

The Video Card Configuration window allows you to set video parameters for the video card in the encoder. Video parameters must be set for each video card in each encoder (1 through 10, if your system is equipped with the maximum number of encoders).

When you double click on the video card in the encoder's device configuration window, the video card's configuration window appears. Because all video cards are configured in a similar manner, only one example is shown here.



Title Bar

The title bar identifies the encoder controlling the video card and the slot number the card occupies in the chassis.

Name

Use this field to set the name (maximum 8 characters) of the card. This card name appears in the card name drop down box on the PID Summary window.

General

Input Format

Use this field to assign the input signal format that the video card is set to receive. The drop down box offers the following format options:

525	625
NTSC Composite	PAL Composite
Serial D1 - 525	Serial D1 - 625
Parallel D1 - 525	Parallel D1 - 625
Component - 525	Component - 625
YC 3.58 MHz	YC 4.43 MHz

Bitrate (Mbps) ➢ 08.0

This field indicates the quality of the transmitted video (data transmission rate). To set the compressed bit rate, enter a three-digit decimal number in the range from **00.5** to **15.0**. The bit rate value can be set in **0.1** MB steps.

Increasing the number in this field increases the video bandwidth at the encoder thereby improving the quality of the video transmitted by the encoder. When this channel is not used, set this field to **Off**.

Group ID ➢ 0

Use this field to define the encryption Group ID (GID) for the video card – in the range from **0** to **31**. GID **0** indicates no encryption for the current elementary stream.

When the Scramble check box is set to **ON**, the GID field is forced to a non-zero value.

For more information on scrambling group IDs, see *Scrambling Group* in the *Glossary*.

PID

Use this field to define the video elementary stream PID for the video card – in the range from **32** to **8190**. PIDs are normally set up by S-A installation personnel during system installation. For more information, see the topic *PID Summary* and *PID* in the *Glossary*.

Note: The PID you enter must be a PID that is not in use by the system. Otherwise, the system displays the message "*PID in use. Next available is xxxx*".

Scramble

Use the check box to define if encryption is enabled or disabled. Click to enable encryption for the video service (current elementary stream). Clear the check box to disable encryption for the current elementary stream.

For more information, see *Scrambling Group* in the *Glossary*.

Resolution and Bandwidth

Use the Horizontal and Vertical fields to set the source resolution (line standards) of the compressed signal. The selections available for Horizontal and Vertical resolutions depend on the Input Format selected.

Note: Vertical resolutions for 625-line input signal formats are 576, while Horizontal resolutions for 525-line input signals are 480.

Typical resolutions for NTSC and PAL input signals are indicated below:

525-line		625-line	
Horizontal	Vertical	Horizontal	Vertical
704	480	704	576
544	480	544	576
480	480	480	576
352	480	352	576

Horizontal

Use this field to set the signal's horizontal resolution. Select a resolution from the drop down box.

Vertical

Use this field to set the signal's vertical resolution. Select the **PAL** or **NTSC** resolution from the drop down box.

Use the Luma and Chroma fields to set the video bandwidth of the input signal. The Luminance and Chrominance bandwidth depend on the Horizontal Resolution setting. Settings available for each resolution are as follows:

704		544		480		352	
Luma	Chroma	Luma	Chroma	Luma	Chroma	Luma	Chroma
4.30	1.20	2.00	0.6	1.50	0.75	1.90	1.00
5.00	2.20	2.75	1.00	2.00	1.00	2.70	1.35
5.50	2.75	3.10	1.35	2.10	1.05	2.80	1.40

Luma (MHz)

Use this field to set the signal's Luma bandwidth. Select a setting from the drop down box.

Chroma (MHz)

Use this field to set the signal's Chroma bandwidth. Select a setting from the drop down box.

Test Parameters

Output ➢ Live Video

This test checks the video processing capability of the encoder. You can select **Live Video** if input video is available, **Test Pattern** to select one of the 16 internally-generated test patterns available in the Pattern field, or **Alter Video Pattern** to alternate between live video and the test pattern selected in the Pattern field below.

Note: The Enable if No Input field must be set to **ON** to enable selection of a test pattern when no input video is available.

Line 21 Test ➢ OFF

This test checks line 21 closed captioning using an internally-generated test pattern, when the check box is set to **ON**.

Pattern

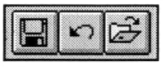
Any one of 16 internally-generated test patterns can be selected when the Output field is set to either **Test Pattern** or **Alter Video Pattern**. Select a test pattern from the drop down box. The selectable test patterns are:

Test Patterns	Test Patterns	Test Patterns
Flat Black	FCC Multiburst	Pulse and Bar
Flat Gray	FCC Composite	Sweep
Flat White	NTC7 Combination	Horizontal Centre
Luma Ramp	NTC Composite	Matrix
Color Bar 100	Staircase 5 Step	
Color Bar 75	Sin XX	

Enable if No Input

Use this field to enable or disable automatic selection of a test pattern. When the check box is set to **ON**, a test pattern is automatically displayed if the encoder detects no input video.

Video Card Configuration Actions

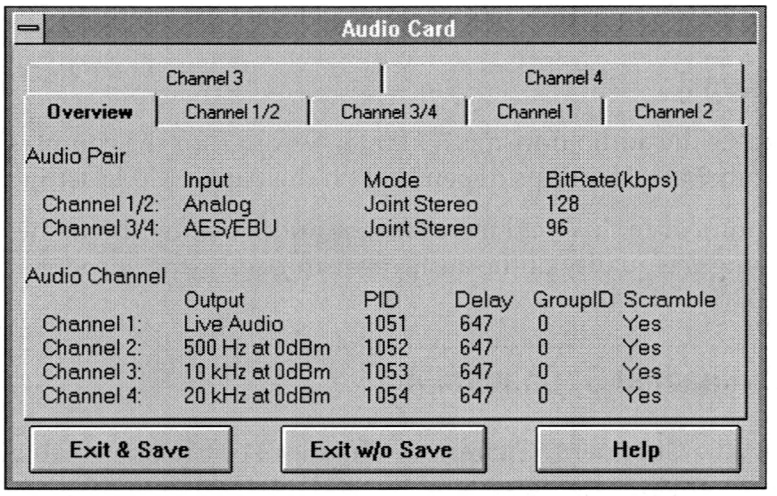


Only the standard Update, Undo and Refresh actions are available when the Video Card Configuration window is displayed.

Audio Card Configuration

The Audio Card Configuration windows allows you to set the audio parameters for each audio card in the primary encoder. Audio parameters must be set for each audio card in each encoder (1 through 10, if your system is equipped with the maximum number of encoders). Because all audio cards are configured in a similar manner, only one example is shown here.

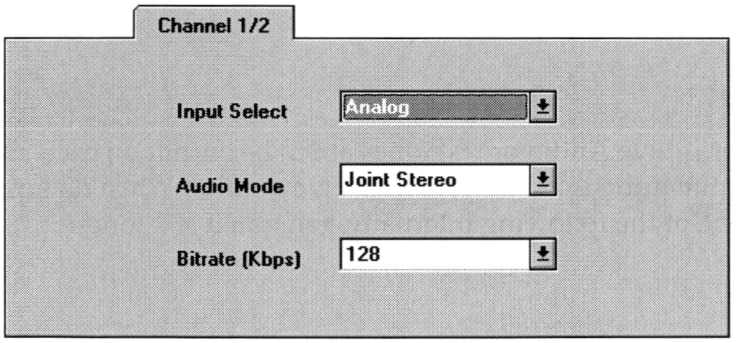
When you double click on an audio card in the encoder's Device Configuration window, the audio card's Overview tab appears similar to the one shown below.



The audio card's Overview tab displays information at-a-glance for each audio pair and audio channel controlled by the card. For more information on these fields, see the descriptions that follow for Channel 1/2, 3/4 and Channel 1, 2, 3, 4.

Channel 1/2, Channel 3/4

When you select the Channel 1/2 or Channel 3/4 tab on the Audio Card Configuration window, the system displays a tab similar to the one shown below. These tabs let you control the parameters of the source audio output to the PCC-3000 system. Since the Channel 1/2 and Channel 3/4 tabs are identical, only one example is shown here.



Input Select ➢ Analog

This field indicates the type of audio source each encoder outputs to the PCC-3000 system, either **Analog**, **AES/EBU** (digital), or **Serial D1**. **Serial D1** applies to the Serial D1 input on the encoder.

Audio Mode ➢ Single Mono

This field indicates the audio channel configuration output from the encoder. Each field can be set to either **Single Mono**, **Dual Mono, Stereo** or **Joint Stereo**.

Note: The decoder must be equipped to handle dual mono, otherwise only one audio channel is output by the decoder.

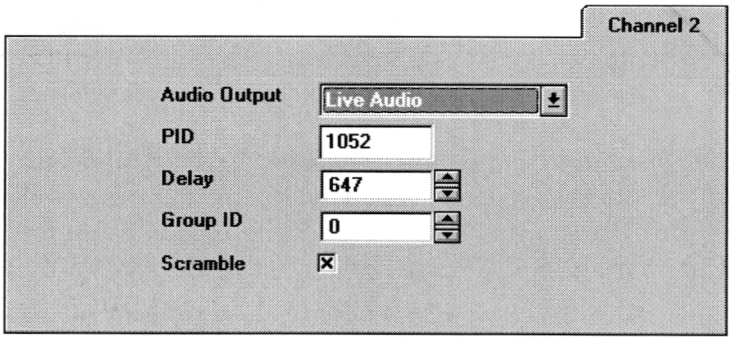
Bit Rate (Kbps) ➢ 64 Kbps

This field indicates the audio transmission rate. Settings for the compressed bit rate are available from **64** to **384** Kbps depending on the Audio Mode setting.

Increasing the number in this field increases the audio bandwidth at the encoder thereby improving the quality of the audio transmitted by the encoder.

Channel 1, Channel 2, Channel 3, Channel 4

When you select the Channel 1, Channel 2, Channel 3 or Channel 4 tab in the Audio Card Configuration window, the system displays a tab similar to the one shown below. These tabs let you control the parameters of the individual audio channels within the PCC-3000 system. Since the Channel 1 to 4 tabs are identical, only one example is shown here.



Audio Output

This field indicates if Live Audio or test tones are to be output on each audio channel. When input audio is available, select **Live Audio**. When no input audio is available, select one of the following internally-generated test tones:

Settings	Settings
Live Audio	1 kHz at -40 dBm
125 Hz at 0 dBm	2 kHz at 0 dBm
500 Hz at 0 dBm	10 kHz at 0 dBm
1 kHz at 0 dBm	20 kHz at 0 dBm
1 kHz at -20 dBm	Digital Silence

PID

This field indicates the PID assigned to the audio channel. This number is also displayed on the PID Summary screen. If you change the PID for any channel on this screen, it will also change on the PID Summary screen and vice versa. In addition, any virtual channels that use the same PID will also change.

For more information, See *PID* in the *Glossary*.

Delay

This field indicates the adjustment required in audio encoding delay (in milliseconds) to make audio synchronize with video (lip sync) in a program which has both audio and video. The value in this field is automatically calculated by the PCC-3000 system when the bit rate on the Video setting screen is changed. However, the value in this field can be changed to suit user preference.

The delay value is displayed in the range between **60** and **2000** milliseconds.

Group ID

Use this field to define the Encryption Group IDs for the audio streams on the selected audio card. Type in or select a value between **00** and **63**.

For more information on encryption group IDs, see *Scrambling Group* in the *Glossary*.

Scramble

This field indicates if scrambling has been enabled or disabled for the selected audio channel. Set this check box to **ON** to enable encryption of the current audio channel.

Audio Card Configuration Actions

In addition to the standard Update, Undo and Refresh actions, the following actions are available when the Audio Card Configuration window is displayed.

Edit

Select Edit from the Actions menu to display a second audio card configuration window. Note that you will probably never need to open a second window to modify the audio settings for the card, but if you do open multiple windows you must remember to close all windows to update any changes made.

Exit & Save

Click **Exit & Save** to update the database with any changes made to this window.

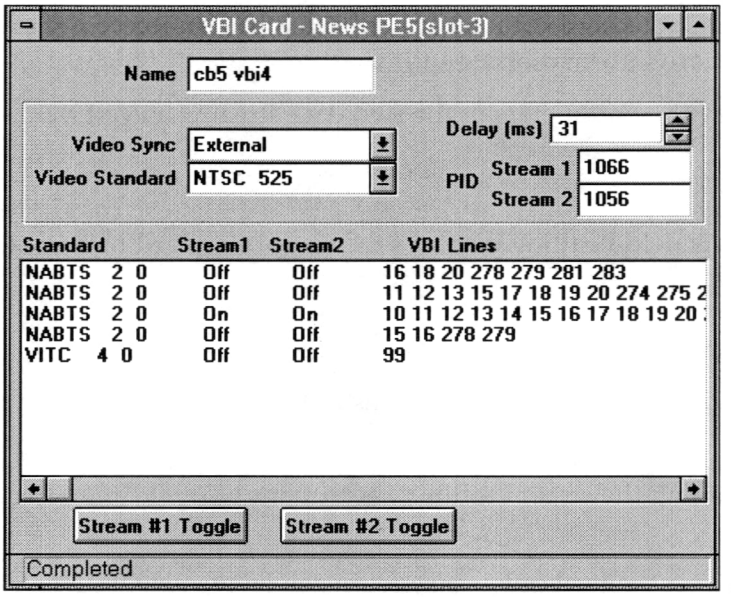
Exit w/o Save

Click **Exit w/o Save** to abort any changes made to the window and return to the previous values. Only usable if changes have not been saved by clicking **Exit & Save**.

VBI Card Configuration

The VBI card configuration window allows you to set the vertical blanking interval parameters for the VBI card in the primary encoder. These parameters must be set for all encoders which contain a VBI card. Because all VBI cards are configured in a similar manner, only one example is described here.

When you double click on the VBI card row in the encoder's Device Configuration window, the system displays:



Title Bar

The title bar identifies the VBI card, the encoder to which it is assigned and the slot number it occupies in the chassis.

Name

Use this field to set the name (maximum 8 characters) of the card. This card name appears in the card name drop down box on the PID Summary window.

Video Sync

Use this field to synchronize the VBI card with the video encoder either internally or externally using special hardware. Select either **Internal** or **External**.

Delay (ms)

This field indicates the adjustment required in VBI encoding delay (in milliseconds) to make VBI synchronize with video in a program which contains both VBI and video. The value in this field is automatically calculated by the PCC-3000 system

when the bit rate on the Video setting screen is changed. However, the value in this field can be changed to suit user preference.

The delay value is displayed in the range between **60** and **2000** milliseconds.

Video Standard

Use this field to define the video standard used in the video encoder. Select either **NTSC 525, PAL 625,** or **PAL-M 525**.

PID (Stream 1, Stream 2)

These fields are used to assign the packet ID (PID) of each stream in the VBI card for this encoder. For more information, See *PID* in the *Glossary*.

These fields display the parameters of the two data streams output by the VBI card.

Standard

Each row below this field heading displays the signal standard being used (e.g., WST, NABTS, NEILSEN, etc.).

Stream 1, Stream 2 ➢ OFF

Each row below these field headings indicates if the VBI standard is **On** or **Off** for a particular stream.

For details on changing the stream setting, see Stream 1 Toggle and Stream 2 Toggle below.

Note that for any one standard only **one** stream can be turned **On**. However, both streams can be turned off, if required.

VBI Lines

Each row displays the first nine line numbers used to transmit data for this video standard. These numbers are entered at the time of installation.

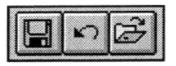
Stream #1 Toggle

Use this button to toggle stream 1 between **On** and **Off**. Highlight the row that you want to change and click the button. The stream remains on the new setting until it is changed at a later time.

Stream #2 Toggle

Use this button to toggle stream 2 between **On** and **Off**. Highlight the row that you want to change and click the button. The stream remains on the new setting until it is changed at a later time.

VBI Card Configuration Actions



Only the standard Update, Undo and Refresh actions are available when the VBI Card Configuration window is displayed.

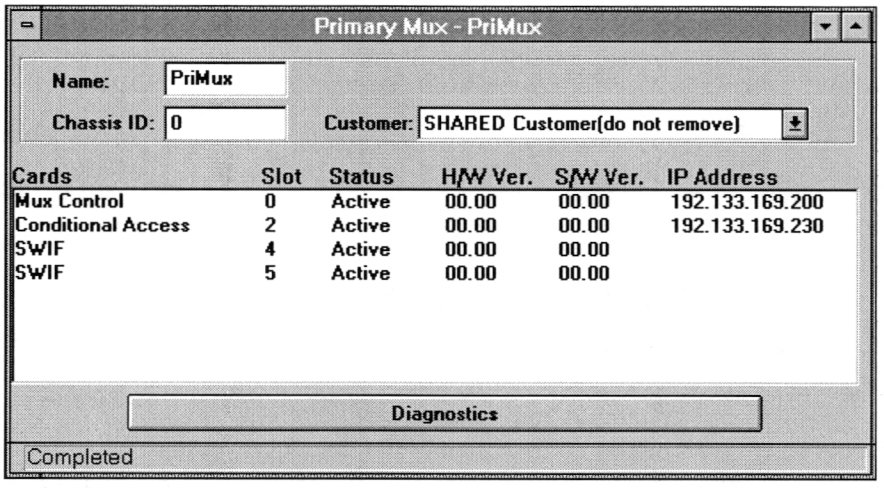
Multiplexer Configuration

Use this window to:

- access the Utility Data Configuration window for the multilplexer
- access the multiplexer's diagnostic messages window
- modify the name assigned to the multiplexer.

A multiplexer normally contains a Mux Control card, a Conditional Access (C.A.) card, a SWIF Receive card and optionally, a Utility Data card. Video and Audio cards are contained within the encoder chassis.

To access a Multiplexer Configuration window, double click anywhere on the Mux device panel *except* in the status area displaying the operating state and mode. The system displays:



Teleport/Administrator	Programmer/Customer
Privilege – Available for complete system.	*Privilege* – Customer may or may not be allowed to view/edit the Multiplexer Configuration window, depending on how the Administrator wants to operate the system.

Title Bar

The title bar identifies the multiplexer type and the name assigned to the multiplexer.

Name

Use this field to set the name (maximum 8 characters) of the Mux.

Chassis ID

This read-only field identifies the ID number set for the Mux. At the time of installation, S-A installation personnel assign each multiplexer a unique hexadecimal number (from **01** to **FF**) which the PCC-3000 system uses for identification.

In most cases, the primary is designated as **10** and the secondary as **1F**.

Customer

Use this field to select the customer name associated with the multiplexer.

S-A recommends that all multiplexers be defined as shared devices. Set the Customer field on each multiplexer to **Shared Customer**. For more information, see *Application Note C – PCC-3000 Configuration Notes*.

Multiplexer Cards

For each card in the Mux, the following parameters are displayed:

Slot – slot number within the chassis

Status – either **Active** or **Failed**

H/W Version – hardware version of the card

S/W Version – software version of the card

IP Address – multiplexer address (Internet protocol) for communication with the system

Depending on the hardware configuration, a multiplexer can contain some or all of the cards listed below.

Mux Control

The Mux Control card is used when multiple audio and video signals must be phased locked and time locked to a common frequency reference.

This card's operating parameters are preset and cannot be changed. This row displays view-only data.

Conditional Access

The CAE (Conditional Access and Encryption) card operates together with the MSYNC (Mux) Control card, and provides conditional access plus video data processing and encryption functions for the PowerVu MPEG 2 digital video encoding system.

This card's operating parameters are preset and cannot be changed. This row displays view-only data.

SWIF

The SWIF Receive card is used to receive SWIF formatted data streams from up to four different SWIF devices, and combine multiple data streams into one data stream. If multiple card sets are used, the inputs can be combined to form one or more outputs.

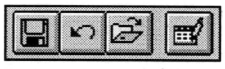
This card's operating parameters are preset and cannot be changed. This row displays view-only data.

Utility Data

This row provides access to the *Utility Data* configuration window where you can set the operating parameters for the audio channel carrying the utility data. Double click anywhere on the row and the system displays the *Utility Data* configuration window. This window is discussed in a following topic.

Note: A configuration window is not available for this card in a Secondary MUX configuration because video settings cannot be changed in standby encoders. Utility Data settings are automatically updated if the PCC-3000 system switches control from a primary multiplexer to a secondary multiplexer due to a primary multiplexer failure.

Multiplexer Configuration Actions



In addition to the standard Update, Undo and Refresh actions, the following actions are available when the Multiplexer Configuration window is displayed.

Edit

To edit a card within the multiplexer chassis, double click on the card's row, or highlight the card row and select Edit from the Actions menu. The system displays the configuration window for the card.

Note: Only the utility data card is editable. The information for all other cards can only be viewed.

Diagnostics

Click the **Diagnostics** button to display diagnostic information for this multiplexer. The system displays the Diagnostics window. For details, see *Chapter 7, Transaction and Alarm Logs* in the topic *Multiplexer Diagnostics*.

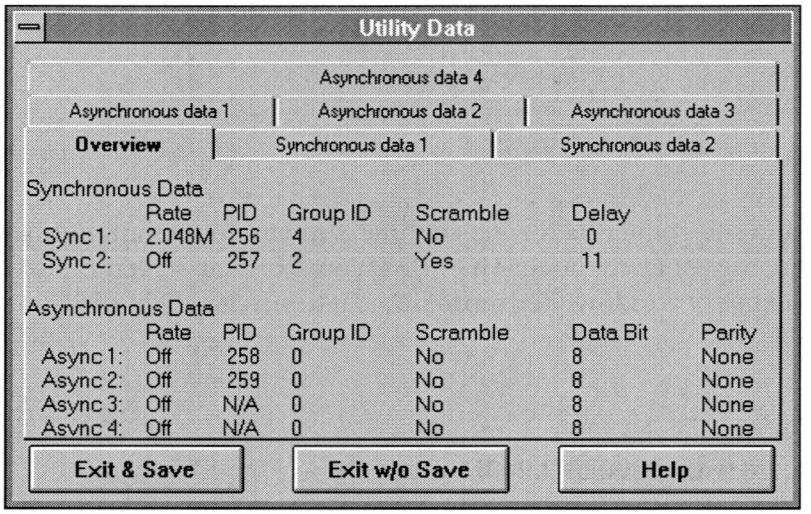
Note: This button is only activated if the multiplexer is in the **Active** state.

Utility Data

The Utility Data window is used to:

- select the baud rate and PID for each synchronous utility data channel
- select the communications protocol for each asynchronous data channel.

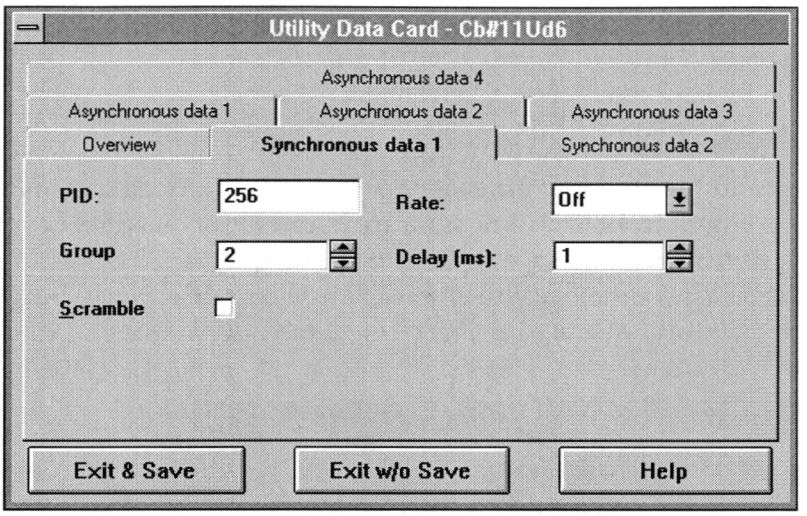
When you double click on the utility data card in the multiplexer's Device Configuration window, a Utility Data Overview tab appears similar to the one shown below.


Utility Data
Asynchronous data 4
Asynchronous data 1
Asynchronous data 2
Asynchronous data 3
Overview
Synchronous data 1
Synchronous data 2
Synchronous Data
Rate PID Group ID Scramble Delay
Sync 1: 2.048M 256 4 No 0
Sync 2: Off 257 2 Yes 11
Asynchronous Data
Rate PID Group ID Scramble Data Bit Parity
Async 1: Off 258 0 No 8 None
Async 2: Off 259 0 No 8 None
Async 3: Off N/A 0 No 8 None
Asvnc 4: Off N/A 0 No 8 None
Exit & Save
Exit w/o Save
Help

The Utility Data Overview tab displays information at-a-glance for each synchronous and asynchronous data channel controlled by the card. For more information on these fields, see the descriptions that follow for Synchronous Data 1 and 2 and Asynchronous Data 1, 2, 3, 4.

Synchronous Data 1, Synchronous Data 2

When you select the Synchronous Data 1 or Synchronous Data 2 tab on the Utility Data Configuration window, the system displays a tab similar to the one shown below. These tabs allow you to control the channel's baud rate, delay and scrambling parameters. Since the Synchronous Data 1 and Synchronous Data 2 tabs are identical, only one example is shown here.



PID

Use this field to select the PID for the channel. Enter a four-digit number that is different from any other channel. The PID entered on this screen is also displayed on the *PID Summary* window. For more information, see *PID* in the *Glossary*.

Rate

This field indicates the baud rate of the synchronous data channel. Select a baud rate in the range from **9600** to **2.048M** baud.

Group

Use this field to define the Encryption Group ID for the synchronous data stream on the selected card. Type in or select a value between **00** and **63**.

For more information on encryption group IDs, see *Scrambling Group* in the *Glossary*.

Delay (ms)

This field indicates the adjustment required in the delay (in milliseconds) of sync data to make audio synchronize with video (lip sync) in a program which has both audio and video. The value in this field is automatically calculated by the PCC-3000 system when the bit rate on the Video setting screen is changed. However, the value in this field can be changed to suit user preference.

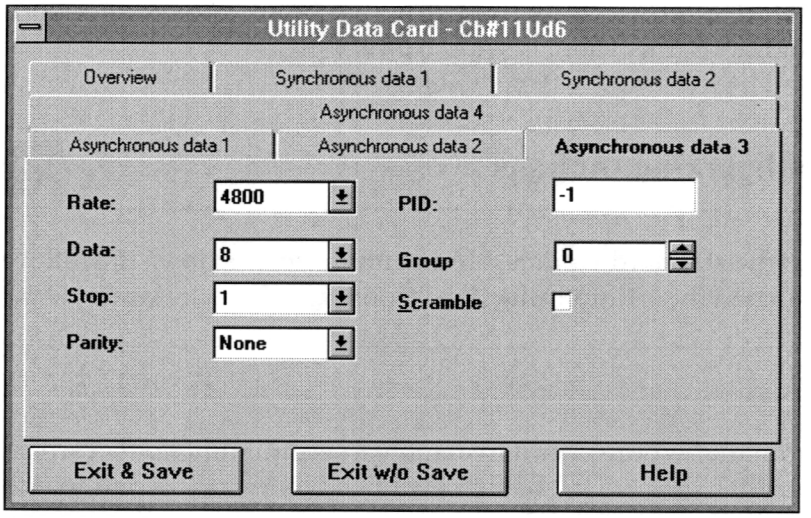
The delay value is displayed in the range between **60** and **2000** milliseconds.

Scramble

This field indicates if scrambling has been enabled or disabled for the selected utility data service. Set this check box to **ON** to enable encryption of the current service.

Asynchronous Data 1, 2, 3, 4

When you select an Asynchronous Data tab on the Utility Data Configuration window, the system displays a tab similar to the one shown below. These tabs let you control the channel's transmission rate and scrambling parameters. Since the Asynchronous Data 1, 2, 3 and 4 tabs are identical, only one example is shown here.



Rate

This field indicates the baud rate of the asynchronous data channel and is used to match the rate of the data being input into the multiplexer. Select a baud rate in the range from **110** to **38400** baud.

PID

Use this field to select the PID for the channel. Enter a four-digit number that is different from any other channel. The PID entered on this screen is also displayed on the *PID Summary* window. For more information, see *PID* in the *Glossary*.

Data ➢ 8

This field identifies the type of data bit. Select a value in the range from **5** to **8** per input value. Under normal operating conditions, this value is set to **8**.

Group

Use this field to define the Encryption Group ID for the asynchronous data stream on the selected card. Type in or select a value between **00** and **63**.

For more information on encryption group IDs, see *Scrambling Group* in the *Glossary*.

Stop ➢ 1

Select either **1** or **2** stop bits (or **1.5** if Data is set to **5**) per input value. Under normal operating conditions, this value is set to **1**.

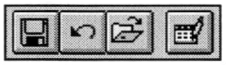
Scramble ➢ OFF

This field indicates if scrambling has been enabled or disabled for the selected utility data service. Set this check box to **ON** to enable encryption of the current service.

Parity ➢ NONE

Select either **Odd**, **Even**, or **None** (no parity) per input value. Under normal operating conditions, this value is set to **None**.

Utility Data Card Configuration Actions



In addition to the standard Update, Undo and Refresh actions, the following actions are available when the Utility Data Card Configuration window is displayed.

Edit

Select Edit from the Actions menu to display a second utility data card configuration window. Note that you will probably never need to open a second window to modify the settings for the card, but if you do open multiple windows you must remember to close all windows to update any changes made.

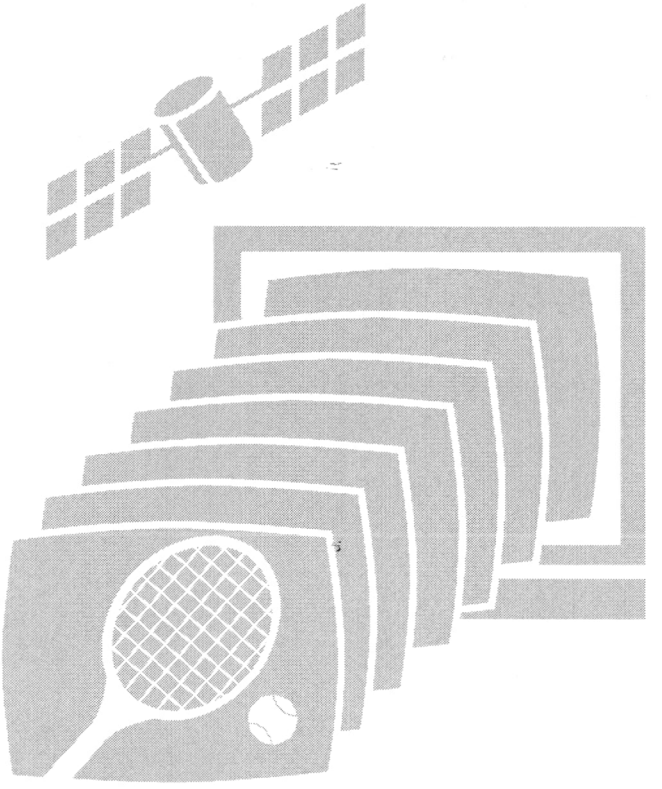
Exit & Save

Click **Exit & Save** to update the database with any changes made to this window.

Exit w/o Save

Click **Exit w/o Save** to abort any changes made to the window and return to the previous values. Only usable if changes have not been saved by clicking **Exit & Save**.

Chapter 4 ALLOCATIONS AND ASSIGNMENTS



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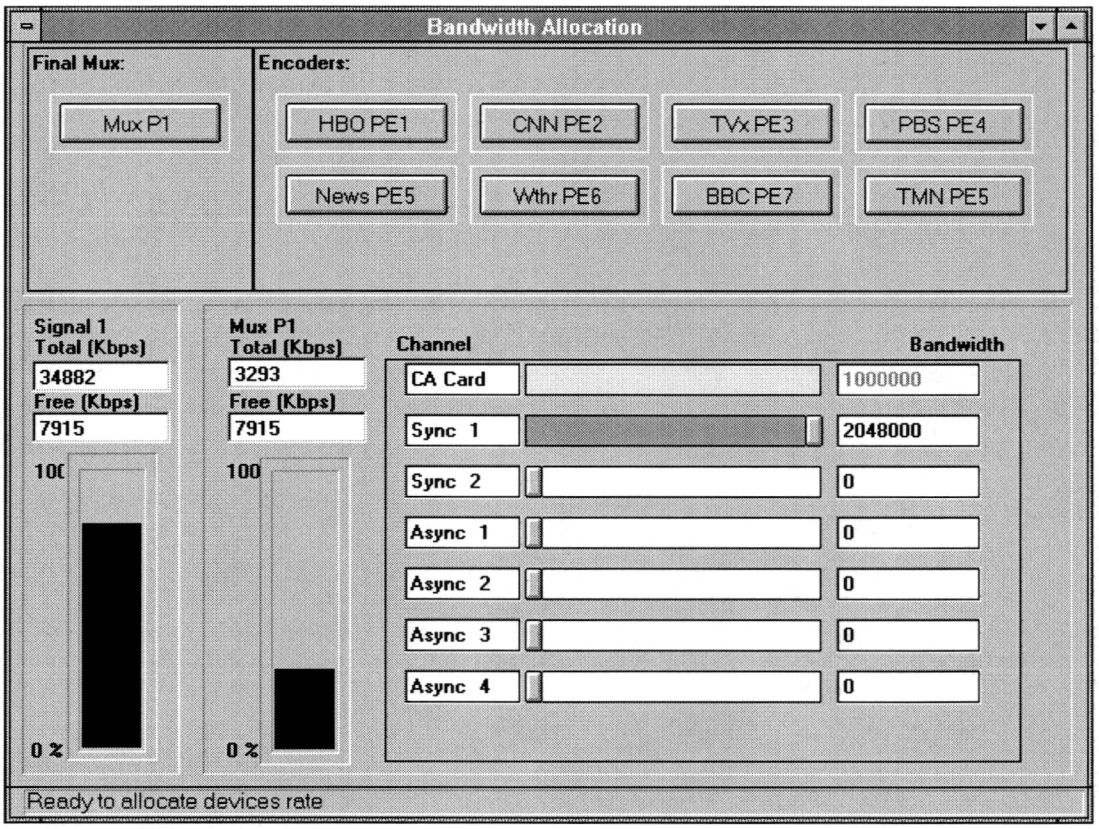
Bandwidth Allocation

The Bandwidth Allocation window allows you to view and control the bit rates assigned to:

- the entire PCC-3000 system
- each multiplexer and encoder in the system
- each video and audio card in each encoder
- synchronous and asynchronous utility data channels in the Multiplexer.

When you select Bandwidth Allocation from the Uplink menu, the system displays:



Teleport/Administrator	Programmer/Customer
Privilege – Available for complete system	*Privilege* – Viewing/editing of this window depends on system setup and design.

Final Mux

This panel displays the multiplexer(s) used by the system. This is the default view when you first select the Bandwidth Allocation window. To view the bitrate settings for the cards associated with this device, click the button that displays the multiplexer's name.

Note: Since this version of PCC-3000 only supports one signal, only one primary mux is displayed.

Encoders

This panel displays the encoders associated with the highlighted multiplexer. To view the bitrate settings for the cards associated with the encoder, click the button that displays the encoder's name.

Signal

This panel displays the total bandwidth available and in use by the system. The bitrate values (total and free) are displayed in discrete numbers and in a graphical percentage use box.

Total (Kbps)

This field displays the amount of total bandwidth available in the system in Kbits/second. This is the total of *all* devices/cards in the system using the system if more than one multiplexer is installed.

Once your system is installed and configured, this value should remain constant. It should only change if new devices are added to the system.

Free (Kbps)

This field displays the amount of total *free* bandwidth available in the signal in Kbits/second. If you change the bit rate settings on any of the devices accessible from this window you will either increase or decrease the amount of free bandwidth available.

If you attempt to save a new configuration that exceeds the amount of bandwidth available, the system alerts you with a message. In this case, the new configuration cannot be saved until the bit rates are adjusted to an acceptable value.

Devices

This panel displays the total bandwidth available and in use by the multiplexer or an individual encoder. The selected device will be surrounded by a blue box on the upper panel. The bitrate values (total and free) are displayed in discrete numbers and in a graphical percentage use box.

From here you can also control the amount of bandwidth assigned to each card within each Multiplexer or encoder.

Total (Kbps)

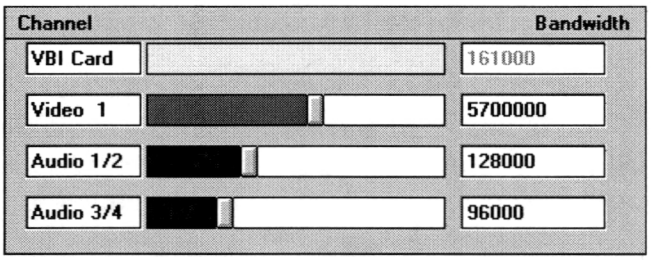
This field displays the total bandwidth assigned to the multiplexer or encoder in Kbits/second. The selected device will be surrounded by a blue box in the upper panel. The total bandwidth is the *sum* of the rates (frequencies) assigned to the selected device's cards. As you modify the bit rates for each channel, this display value changes.

Free (Kbps)

This field displays the amount of bandwidth still available to the multiplexer or encoder in Kbits/second. If you change the bit rate settings on any of the cards associated with the device, you will either increase or decrease the amount of free bandwidth available.

Channel / Bandwidth

These fields display and let you control the bit rates for each card in the Multiplexer or encoder. To change the bitrate for a particular service, either drag the slider control to a new setting, or type in the new rate in the Bandwidth field.



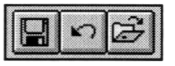
Note that some settings only offer restricted bandwidth control. For example, a **Single Mono** setting on the audio card only lets you set the bandwidth up to 192K. All other audio settings allow you to set the bandwidth up to 384K.

Note that some cards do not offer any bandwidth control (i.e., VBI or Conditional Access). Cards that do not offer bitrate control do *not* display a slider control button, and the bandwidth bar is completely filled (in yellow), similar to the VBI example shown above.

For quick identification, a color code system is used in the channel bar.

Color	Card Type / Setting
Purple	Video card
Light Blue	Single Mono (audio)
Dark Blue	Stereo modes and dual mono (audio)
Light Green	Synchronous data
Olive Green	Asynchronous data
Yellow	VBI card **and** Conditional Access card

Bandwidth Allocation Actions



The following actions are available when the Bandwidth Allocation window is displayed. Each action is accessible from the Actions menu or from a toolbar icon.

Update

Select Update from the Actions menu to update the database with any changes made on this window.

Undo

Select Undo from the Actions menu to abort any changes made to the window and return to the previous values. Only usable if changes have not been saved by selecting Update.

Refresh

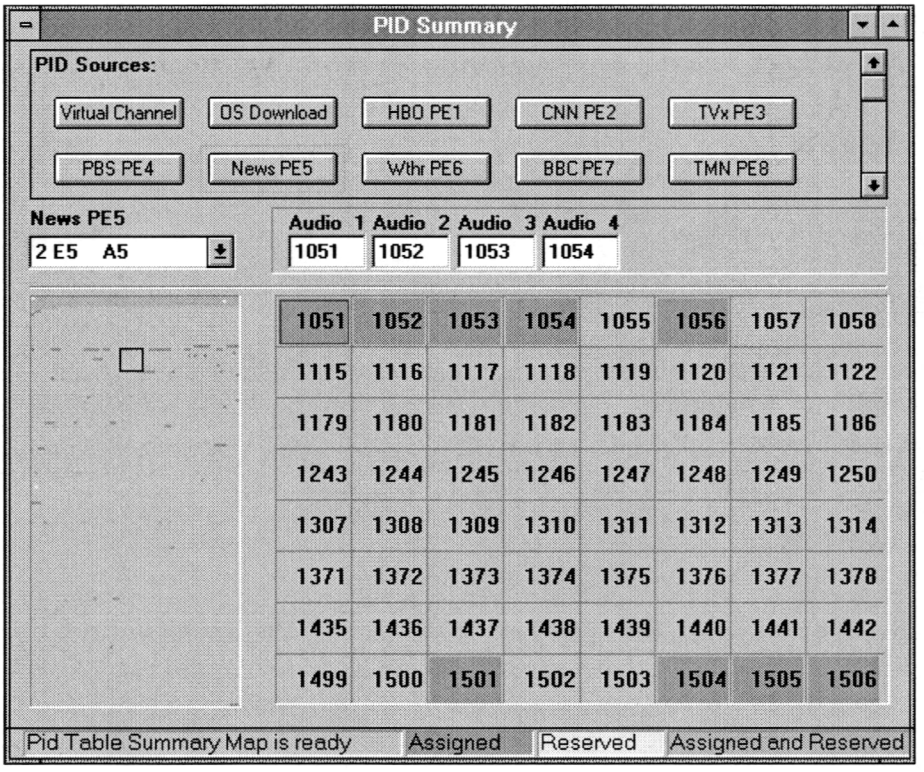
Select Refresh from the Actions menu to retrieve current information from the database. The Refresh function provides a way to refresh the information on screen so that you are working with current data in the active window.

PID Summary

The PID Summary window displays and allows you to control the PIDs (Packet IDs) currently assigned to devices or functions within the system. PIDs are displayed by assigned device (i.e., encoder or Mux) or by function (i.e., virtual channel or OS download).

Each PID Summary window allows you to display and manipulate the assigned PIDs for a selected card type (video, VBI, audio, utility data (asynchronous and synchronous), or virtual channels or OS download PIDs).

When you select PID Summary on the Uplink menu, the system displays a window similar to the one shown below.



Teleport/Administrator	Programmer/Customer
Privilege – Available for complete system	*Privilege* – Recommend no customer access to the PID Summary window *unless* the customers are to create their own virtual channels on the system.

PID Assignments

PIDs are normally assigned by S-A installation personnel at the time of system installation. As a general rule, 4-digit PIDs are assigned to various services and message streams as shown in the tables below. Note, however, that these numbering

assignments are recommendations only. The only rule is that each stream/service must have its own unique PID.

Note: Unless you add new hardware or virtual channels to your system, it is not necessary to alter the PID settings.

Service PIDs	Description
Digit 1	Signal number
Digit 2	Encoder number (zero for MUX)
Digit 3	Slot number (equal to the service – video, audio, etc.)
Digit 4	Index number (i.e., sequential cards in chassis, sequential channels, etc. – usually associated with audio services)

Virtual Channel PIDs	Description
PMT PID	5000 plus the virtual channel number
ECM PID	6000 plus the virtual channel number

Message PIDs	Description
EMM PID	500 (default)

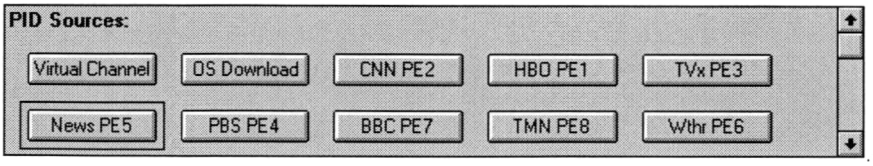
Download PIDs	Description
OS Download	7000 & 7001 (default). Only two PIDs required in current version of software.

How the PID Summary window works

The PID Summary window is designed to let you quickly find a particular PID, component or function in the system and to assign (or modify) the associated PIDs.

Select the device or function

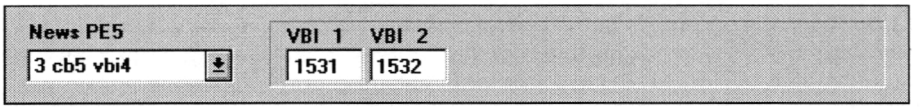
To view and modify the PIDs for a particular card in a particular device, or for a particular function, click the associated button in the upper panel area. For example, the box outline around **News PE5** in the following example shows that primary encoder number 5 is the selected encoder.



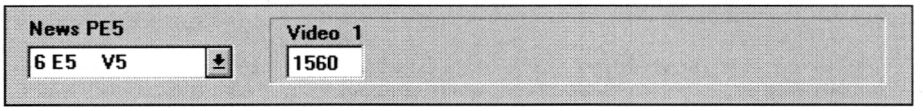
Select the card

Use the drop down selection box to choose the card within the device whose PIDs you want to view or modify. In the **News PE5** (primary encoder number 5) example, you have a choice of VBI card, video card, or audio card. Note how the assigned PIDs for each channel are displayed when you select the card.

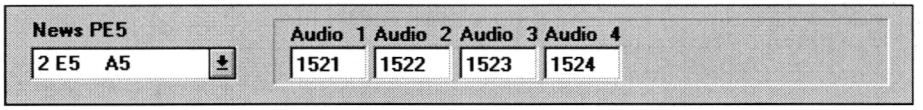
VBI Card



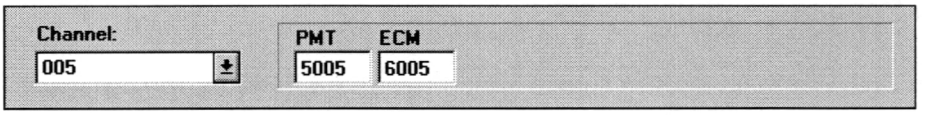
Video Card



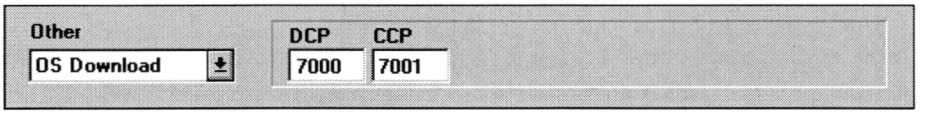
Audio Card



If you click the **Virtual Channel** button, the system allows you to select any of the assigned virtual channels and the PIDs associated with the Program Map Table (PMT) and the Entitlement Control Message (ECM) for each channel.

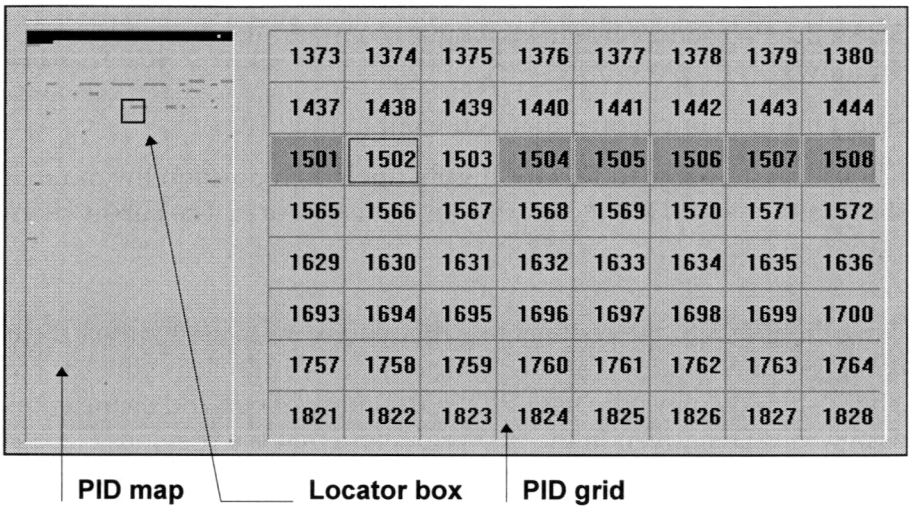


If you click the **OS Download** button, the system allows you to select only the PIDs associated with the Display Control Processor (DCP) and the Compression Control Processor (CCP) for each channel.



PID Summary map and grid

The bottom two thirds of the PID Summary window contains the PID map and grid area.



PID map

The PID map provides you with a "bird's-eye view" of all PIDs in the system.

Locator box

The locator box in the map area allows you to quickly find a general grouping of PIDs. Drag the locator anywhere in the map and release the mouse button. The actual PID numbers within the locator box area are displayed in the PID grid to the right.

PID grid

The PID grid provides you with a detailed view of all PIDs within the locator box area. Note that when you click on a PID in the grid, a red surround box appears indicating that the PID has been selected.

PID colors

All PIDs are color coded as follows:

Color	Description	Color	Description
Blue	Assigned and reserved	Green	Assigned
Yellow	Reserved	Grey	Not assigned

How to assign PIDs

1. Select PID Summary from the Uplink menu. The system displays the PID Summary window.
2. Select the PID source by clicking on one of the source buttons at the top of the window.
3. Select the card or channel that you want to modify.
4. Choose an unassigned PID for the channel, then position the mouse pointer on the unassigned PID and click the left mouse button. The cursor changes to:

5. Drag the PID into the channel box that you want to assign the PID to (or into the configuration window for the particular card) and release the left mouse button. The system displays the new PID in the channel box and changes the color of the assigned PID to green in the PID grid. Note that the previous/replaced PID (if applicable) changes color to grey.

> Note: Some PID values are reserved by MPEG and DVB. Zero is an invalid PID. An attempt to enter a PID already in use (or reserved) will not be accepted by the system. If you search for a PID already in use, the system displays the message *This PID is used by the system.*

6. Click the Save icon to save the PID assignment.

How to remove PIDs

1. Select PID Summary from the Uplink menu. The system displays the PID Summary window.
2. Select the PID source by clicking on one of the source buttons at the top of the window.
3. Select the card or channel that you want to modify.
4. Determine what PID you want to remove, then position the mouse pointer on the assigned PID channel field (on the PID Summary window) and click and hold the left mouse button. The cursor changes to:

5. Drag the PID out of the field and into the PID grid area and release the left mouse button. The system blanks out the PID in the channel box and changes the color of the PID in the PID grid to grey.
6. Click the Save icon to save the PID removal.

How to locate PIDs

There are several methods to locate a PID number. Note that in this context, the term *locate* means to find a PID number in the grid that you want to *search* for in the system.

- Use the locator box in the PID map to select a general range of PIDs.
- From within the PID grid, use the **Page Up** and **Page Down** keys to move left or right in large blocks through the PID numbers.
- From within the PID grid, use the arrow keys (↑ ↓ ← →) to move up or down, or left or right through the PID numbers.

How to search for PIDs

When you search for a PID on the PID Summary window, you search for the device and card already using the PID.

- Select a PID number on the grid
- Select Search from the Actions menu.

The system displays the selected PID in the top left hand corner of the grid, places the locator box in the appropriate area on the PID map and displays the PID source and channel.

PID Summary Actions

In addition to the standard Update, Undo and Refresh actions, the following actions are available when the PID Summary window is displayed.

Search

Highlight a PID in the PID grid and select Search from the Actions menu.

Three types of search outcomes can occur:

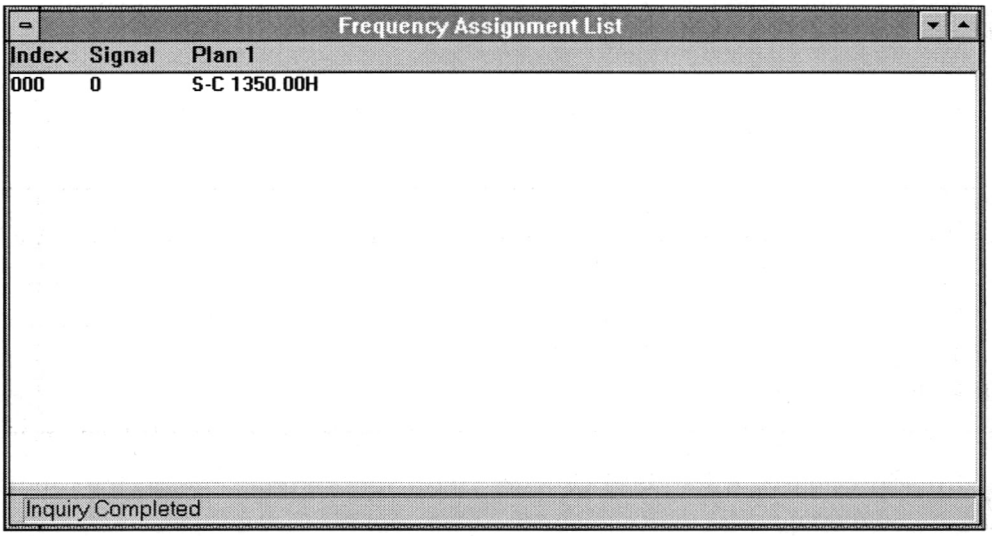
- The system finds the PID and displays the device and the card (if applicable) using the PID.
- The system finds the PID and identifies it as a reserved PID, then displays the message *This PID is used by the system.*
- The system finds the PID number and identifies it as an unused PID, then displays the message *This PID is not used by the system.*

Frequency Assignment List

The Frequency Assignment List window is used to view the signal(s) used by the system and to access other windows where you can assign the polarization, frequency and FEC settings for a site.

Note: When the system is configured for a single transponder signal, the fields on this screen cannot be changed. However, when the system is configured for two or more transponder signals, the polarization, frequency and FEC settings for each frequency index (except index 000) can be changed.

When you select Frequency Summary on the Uplink Menu, the system displays a Frequency Assignment List window similar to that shown below. The screen shown is for a single-signal system with one frequency index and a single plan. The number of frequency plans is set by S-A installation personnel at installation.



Teleport/Administrator	Programmer/Customer
Privilege – Available for complete system	*Privilege* – Recommend no customer access to the Frequency Assignment window since frequency parameter modifications affect the entire system.

Index

A frequency index is a three-digit number which identifies a set of site transmission parameters such as the site name, signal and up to eight decoder download frequencies. Each site can assign up to 255 frequency indexes. However, note that no two frequency indexes can have the same Site Name and Signal.

Signal

This version of the PCC-3000 system only supports a single signal. Each uplink system is assigned to transmit over a separate transponder signal at a set L-Band

frequency. The Signal field indicates the transponder signal number used for transmission to decoders controlled by the particular site.

Note: In a single-signal system, the frequency parameters (polarization and frequency) associated with the transponder Signal (normally Signal 1) are assigned to Freq. Index 000, which cannot be changed.

Plan 1

The Plan field indicates the transponder signal frequency (Satellite, L-Band, C-Band, Ku Band) for each frequency plan. All decoders receiving EMMs on the selected transponder signal must be set to this frequency to receive their downloaded frequency plan and authorized virtual channel services. To change the frequency for any plan to another setting, see the *Plan 1 Tab* in a later topic.

The polarity of the transmitted signal for the frequency plan is displayed to the right of the frequency setting; either **H** (for Horizontal) or **V** (for Vertical). To change this setting, see the *Plan 1 Tab* in a later topic.

Frequency Assignment List Actions

In addition to the standard Update, Undo and Refresh actions, the following action is available when the Frequency Assignment List window is displayed.

Edit

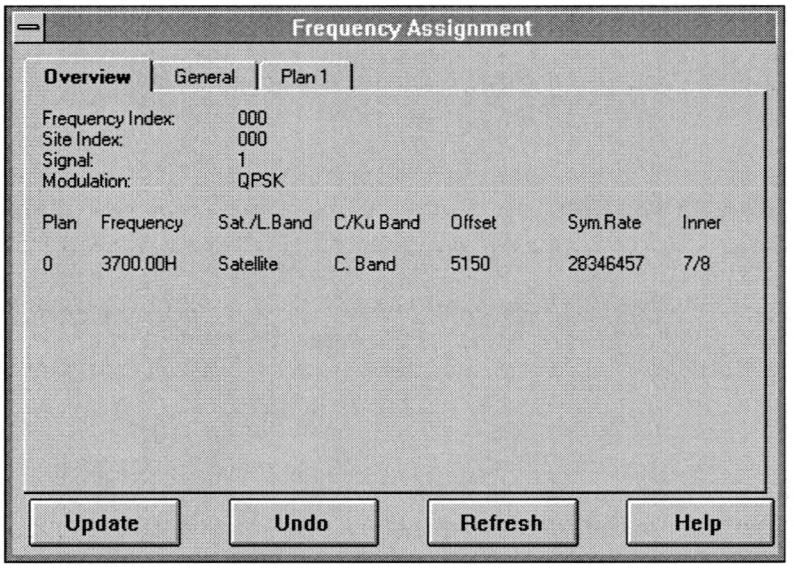
To edit a frequency index, double click on the frequency index row, or highlight the row and select Edit from the Actions menu.

Frequency Assignment

The Frequency Assignment window is used to change the Polarization, Frequency and FEC for all Frequency Indexes except 000. The frequency parameters for Frequency Index 000 are set at the time of installation.

Example: To edit **Frequency Index 000** shown in the Frequency Assignment List window on an earlier page, highlight the row which contains **000**, and select Edit from the Actions menu.

When you highlight a frequency index on the Frequency Assignment List window and select Edit from the Actions menu, the system displays a window similar to the following:

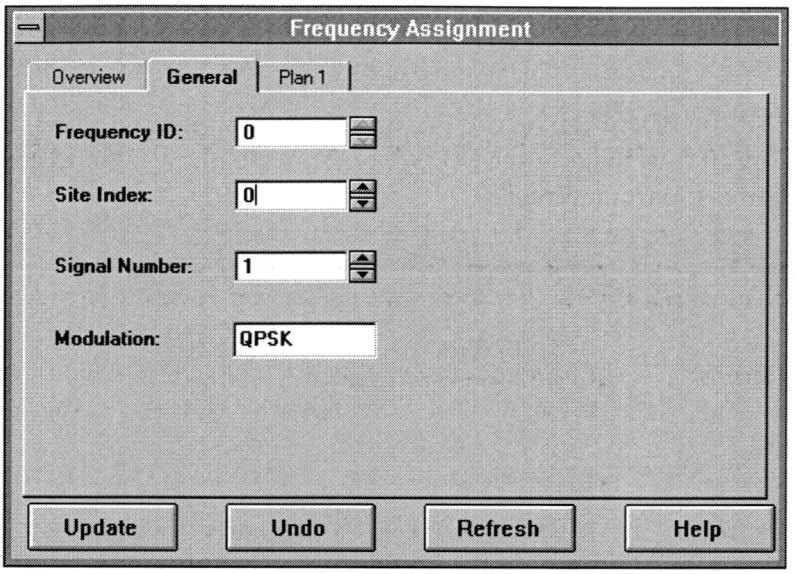


The Overview tab displays information at-a-glance for the selected frequency index. For more information on these fields, see the descriptions that follow in the topic items, *General* and *Plan 1*.

General

When you select the General tab on the Frequency Assignment window, the system displays a tab similar to the one shown below. This tab allows you to view the general frequency identification information.

Note: In a single signal system it is not necessary to modify any of the settings in this window.



Frequency ID

This field is editable ***only*** if your system contains two or more transponders. A frequency ID is a three-digit number which identifies a set of site transmission parameters such as the site name, signal and up to eight decoder download frequencies. Each site can assign up to 255 frequency indexes. However, note that no two frequency indexes can have the same Site Name and Signal.

Site Index

This field is editable ***only*** if you are adding a frequency index. Otherwise, it is a read-only field identifying the site to the PCC-3000 system and other sites in the uplink system.

Signal Number

This field is editable ***only*** if you are adding a frequency index. This version of the PCC-3000 system only supports one uplink signal. Each uplink system is assigned to transmit over a separate transponder signal at a set L-Band frequency. The Signal field indicates the transponder signal number used for transmission to decoders controlled by the particular site.

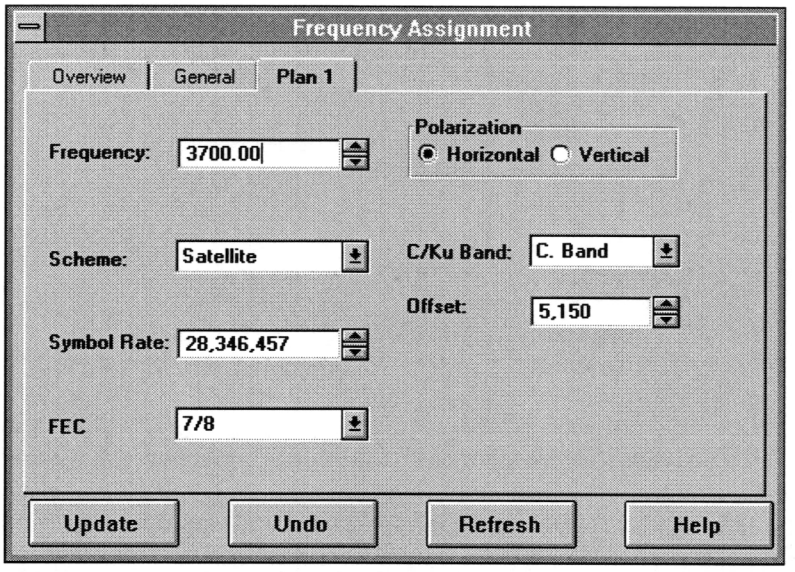
Note: In a single-signal system, the frequency parameters (polarization and frequency) associated with the transponder Signal (normally Signal 1) are assigned to Freq. Index 000, which cannot be changed.

Modulation

This field indicates the type of modulation defined for the frequency index.

Plan 1

When you select the Plan 1 tab on the Frequency Assignment window, the system displays a tab similar to the one shown below. This tab allows you to control the frequency broadcast parameters.



Frequency

Use this field to set the frequency (in GHz) assigned to the index. If you use the **Satellite** setting in the Scheme field, this value should represent the frequency used by the satellite. Satellite frequency information is available from the satellite service provider.

Polarization

Use these radio buttons to select either a **Horizontal** or **Vertical** polarity for the frequency index.

Scheme

Use this field to select either **Satellite** or **L.Band**. The L-Band is a frequency standard used by the *decoder*. If you do not understand how the C/Ku Band and Offset fields work in conjunction with the **L.Band** setting, use only the **Satellite** setting, or call S-A Customer Support for more information.

Note: If you select **Satellite**, you will not need to make any modifications to the C/Ku Band or Offset fields.

C/Ku Band

Use this field to select either **C.Band** (in the range from **3200** to **4200** MHz) or **Ku.Band** (in the range from **11700** to **12200** kHz).

Symbol Rate

Use this field to set the number of symbols transmitted per second. The symbol rate is derived by the formula (Bandwidth ÷ 1.27 = Symbol Rate per second).

Offset

➢ see below

Use this field to select the offset frequency for the transponder signal. The default value for the **C.Band** setting is **5150** MHz. The default value for the **Ku.Band** setting is **14250** KHz.

FEC

Use this field to define the FEC setting for the frequency index. This value represents the amount of bandwidth allocated for this plan.

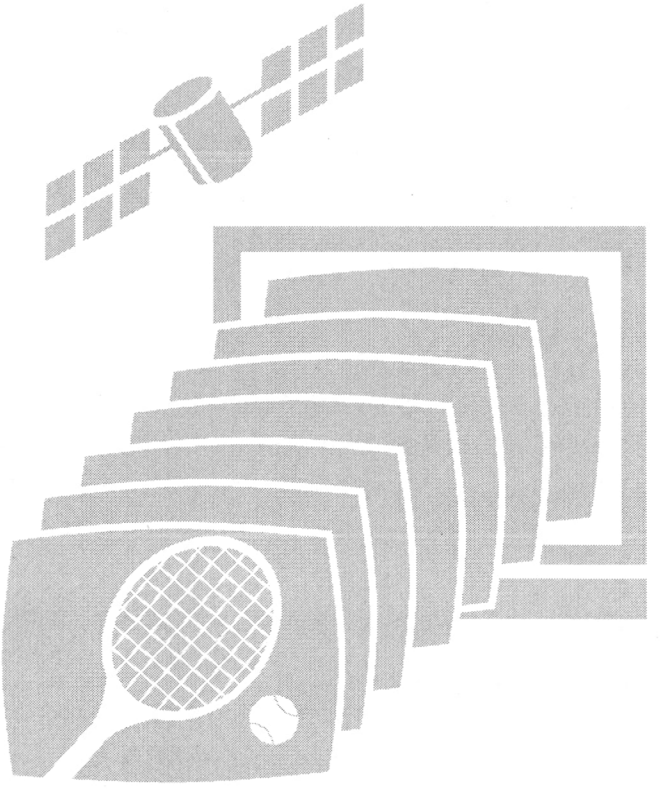
Frequency Assignment Actions

In addition to the standard Update, Undo and Refresh actions, the following action is available when the Frequency Assignment window is displayed.

Edit

This action is reserved for future use.

Chapter 5 NETWORK SECURITY



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Introduction

The Network Security function is used to define the active network broadcast and multi-session keys (MSKs). The MSKs of the active network are used by the PCC-3000 system to encrypt the system data. Each network is assigned two MSKs (even and odd). Two MSKs provide additional security so that the operator can change the inactive key, transmit it to the decoder population and then switch in as the active key at a later time with little or no interruption in services. Only one of the MSKs may be set as the source key (i.e., designated as the encryption key for the network broadcast). The selected source key (active MSK) corresponds to the network defined for the active broadcast ID. The non-active MSK can be changed without affecting service.

The decoders in the network can decipher the broadcast if they possess the encryption key. This encryption/decryption key is transmitted to the decoders in addressed data packets (ADPs).

Security is established by periodically changing the MSKs. If ADPs are enabled to transmit both the even and odd keys, when the decoder database is refreshed, the decoders receive both keys, regardless of which is the source key. (In this case, the Transmission field on the Refresh Task window must be set to **All Information**. Refer to *Chapter 8, Decoder Database Control* in the topic *Refresh Task Summary* for more information.)

After the database is refreshed and all authorized decoders are updated, alternating the source key designation causes little or no loss of service. After the switch has been implemented, the operator may change the inactive key and transmit it to the decoder population.

Entitlement Management Message

Service authorization is controlled by the transmission of Entitlement Management Messages (EMMs) to the decoders in the network. Only those decoders in the database can be authorized for service.

An EMM is an encrypted data packet which is broadcast as part of the digital signal. The packet begins with a non-encrypted numerical address which specifies the destination decoder. Only the destination decoder is capable of decrypting the rest of the packet. A variety of information can be delivered by addressed data packets,

The EMM carries all the global and addressed control information, from multi-session keys to memory patches. In PowerVu Receivers, this includes system data and ADPs.

Changes to a decoder record are made simultaneously to its data packets to maintain record-packet synchronization.

The operator has absolute control over the modes of EMM transmission. EMMs may be transmitted to:

- a select group of the decoder population
- the entire decoder (database) population
- an individual decoder.

Transmission to the decoder population can only be *continuous* unless halted manually by the operator. In the continuous mode, this cycle can be interrupted for a priority transmission sequence (e.g., transmission to a specific decoder). Transmission addressed to a specific decoder is limited to a fixed duration.

However, automatic database updates (using EMMs) have top priority and can interrupt any transmission mode to address the affected decoder immediately. Thereafter, the operator may refresh the database by starting a continuous update transmission to update the decoder population.

Multi-Session Keys

A decoder is authorized only if it has the current multi-session key (MSK). Otherwise, it cannot decipher the broadcast signal for service. The operator may include this information as a component of the data packets for addressed transmission. It is recommended that the multi-session key be changed regularly to maintain network security integrity. This may be accomplished by refreshing the decoder database with minimal disruption of regular service.

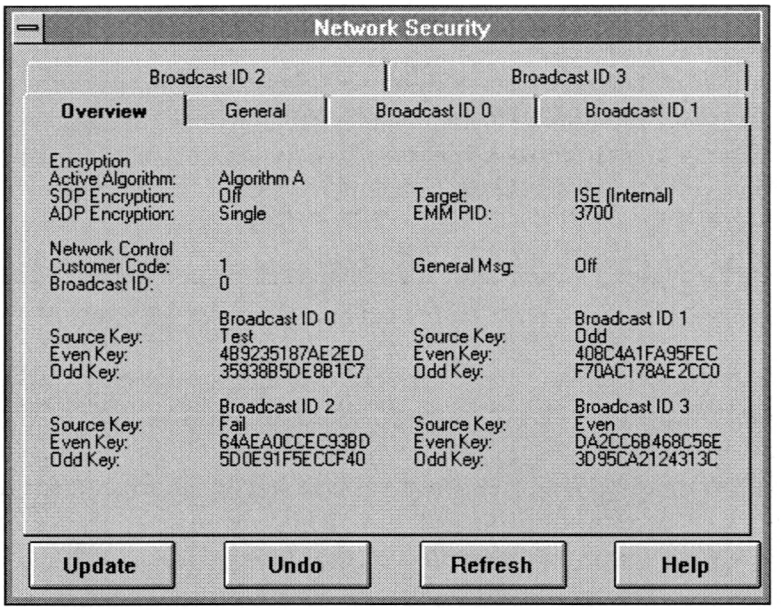
If both even and odd keys are selected as components of EMM transmission, the non-active key may be changed without affecting service. After a complete transmission to the decoder population, all addressed decoders should have the new key. At this point, the non-active key may be selected as the new multi-session key. Since the decoder has already received the key, minimal service disruption occurs.

EMM Updates

The rate at which a decoder database can be updated (refreshed) depends on the number of operator initiated functions underway at the time of the decoder database update. Under normal operating conditions with no other decoder database operations being performed, EMMs are transmitted at a rate of 300 per second. This is the quickest rate of transmission possible. A total of six ADPs are required to update a decoder, therefore approximately 50 decoders can be updated per second. This number may be used to determine the refresh rate for a decoder database. For example, if a selected database consists of 10,000 decoders, it takes at least 200 seconds (3 minutes, 20 seconds) to update the population. Similarly, it takes at least 2,000 seconds (33 minutes, 20 seconds) to update 100,000 decoders.

Network Security

The Network Security window allows you to define the active network broadcast and multi-session keys (MSKs). When you select Network Security on the Uplink menu, the system displays:

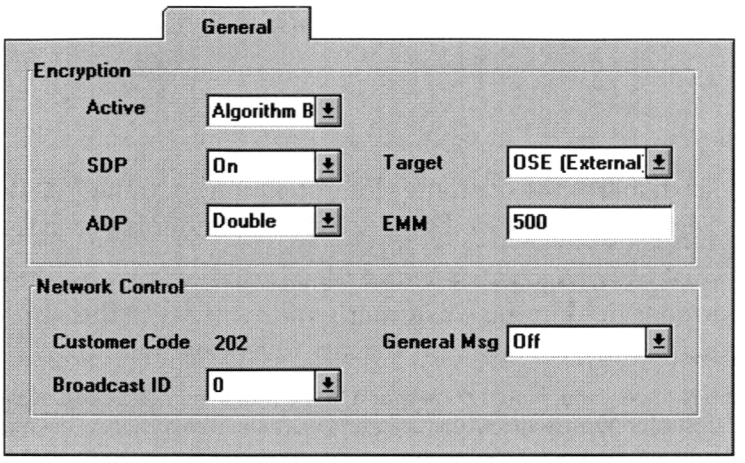


The Network Security window Overview tab displays information at-a-glance for general encryption and network control information and the current even and odd MSKs for each Broadcaster ID.

Teleport/Administrator	Programmer/Customer
Privilege – Available for complete system. Recommend privilege not be given to any customers.	*Privilege* – Recommend this feature not be made available to customers. Security of the system should not be an issue with customers, plus any changes could affect the complete operation of the system.

General

When you select the General tab on the Network Security window, the system displays a tab similar to the one shown below. This tab allows you to control the encryption and network control parameters used by all Broadcaster IDs.



Encryption

Active ➤ ALGORITHM A

This field indicates the currently active encryption format (**Algorithm A** or **Algorithm B**). This field is assigned by Scientific-Atlanta, and is normally set to **Algorithm A**.

SDP ➤ OFF

Use this field to determine if system data is to be decrypted using one of the inboard security microprocessors defined in the Target field. When the system is first set up this field is set to **OFF**.

Target

This field identifies the security microprocessor used to decrypt system data. Select between the inboard processor, **ISE (Internal)**, or the outboard processor, **OSE (External)**.

ADP ➤ SINGLE

This field indicates the selected encryption type for the addressed data packet (**Single** or **Double**). This field is normally set to **Single** except at slave sites. **Double** encryption is used when both the ISE and OSE are active in the decoder. Select between **Single** or **Double,** as required.

EMM

This field displays the PID used by the MPEG table EMMs.

Network Control

Customer Code

This view-only field displays the customer identification code that the decoders in the network are assigned (belong) to. The Customer Number is pre-assigned by Scientific-Atlanta.

Ensure that the Number field in the Customer window is set to the same value as the Customer Code field in the Network Security Overview window.

Note: The value in the Number field should correspond to the 3-digit numeric code assigned to the particular Administrator by Scientific-Atlanta's administration department. This enables decoder distribution diskettes to be loaded by the system (the system checks the header field of the diskette and matches it against the Number field described here).

General Msg

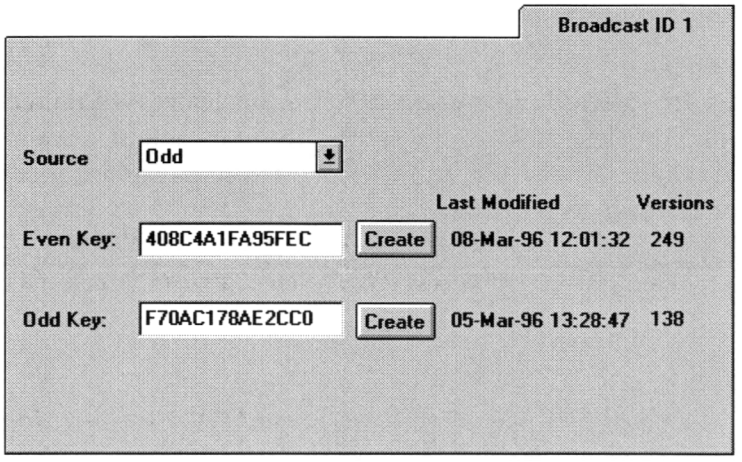
This field is reserved for future use. When activated, this field will let you select if a general teletext page is to be displayed. **On** indicates that the message is to be displayed. **Off** indicates that the message is not to be displayed. Note that this function is usually performed on a teletext terminal (if available) and is generally left in the **Off** position on this screen.

Broadcast ID ➢ 0

This field is used to select the Active Network Broadcaster. To change this field, click on the pull down box and select a number in the range from **0** to **3**.

Broadcast ID – 0 to 3

When you select a Broadcast ID tab on the Network Security window, the system displays a tab similar to the one shown below. This tab allows you to control the MSK type and the generation and assignment of the even and odd keys.



Source

Use this field to select the **Even**, **Odd**, **Test** or **Fail** MSK (for each Broadcast ID) used for system data encryption during broadcasts. The **Test** and **Fail** keys remove encryption on odd and even tiers respectively.

Even Key / Odd Key

The Even Key and Odd Key fields contain the 14-digit hexadecimal values of the keys used to encrypt system data during network broadcasts. The tab also displays the last time the key was modified and the number of versions of each key used since the system was first installed.

If the Even Key is selected as the source key, the operator may make changes to the Odd Key without affecting services, and vice versa.

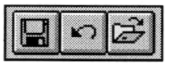
Position the cursor in the desired field and type in the desired hexadecimal value.

Assign a Random Multi-Session Key

As an alternative, you can have the PCC-3000 system assign a random MSK for the Even Key or the Odd Key.

1. Click the **Create** button for the corresponding Even or Odd key. The system generates a random MSK for the Source Key.
2. Click **Update** to save the new MSK.

Network Security Actions



The following actions are available when the Network Security window is displayed. Each action is accessible only from the icon or from the appropriate button on the window itself.

Update

Click **Update** to update the database with any changes made on this window.

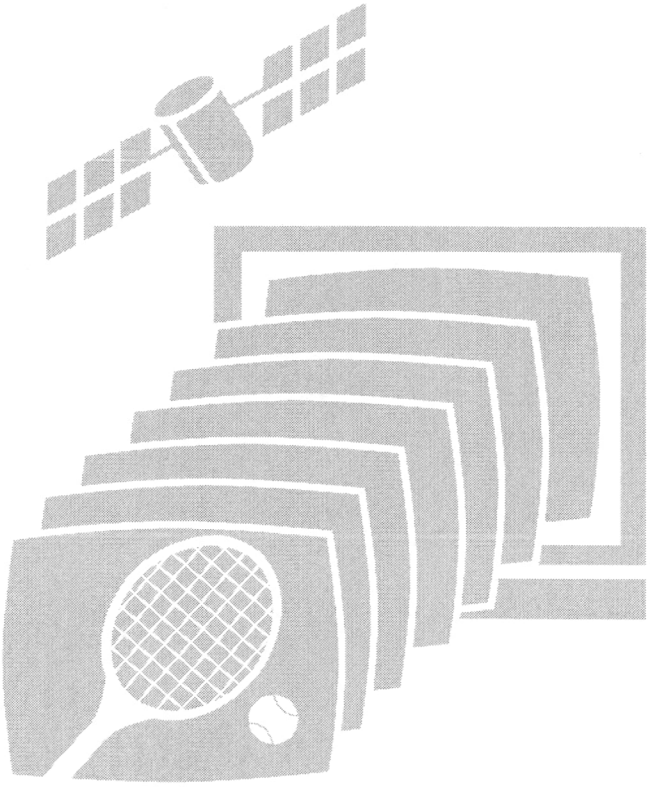
Undo

Click **Undo** to abort any changes made to the window and return to the previous values. Only usable if changes have not been saved by pressing **Update**.

Refresh

Click **Refresh** to retrieve current information from the database. The refresh function provides a method to refresh the information on screen so that you are always working with current data in the active window.

Chapter 6 VIRTUAL CHANNELS



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Introduction

A virtual channel is a collection of services that you define. You may create any number of virtual channels from 1 to 500. Virtual channels must be assigned *after* the service definition for the multiplexer associated with the encoder(s) is enabled.

You are able to define which encoder drives the virtual channel. Virtual channels allow for services to be defined using a single channel number. Each channel can include video (and audio), utility data or text services.

In other words, Virtual Channels are used to combine one or more of the available video, audio, text and utility data services from one or more of the encoders on the multiplexer into a single channel selectable by the encoder. Each channel may offer a different service.

For authorization purposes, these channels can also be assigned one or more program tiers. If a decoder has been authorized (i.e., sent an EMM) with a tier bit that matches that of any given virtual channel tier bit, the decoder configures itself as defined in the virtual channel's settings.

When a virtual channel is properly defined, the decoder can access the channel number on the front panel display.

For related information, see *Chapter 8, Decoder Database Control* and *Chapter 5, Network Security*.

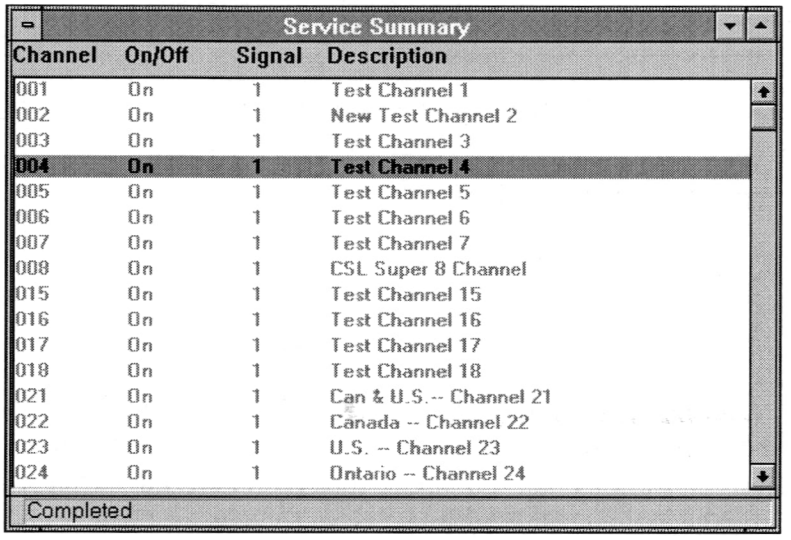
When you choose Service Summary on the Channel menu, the system displays the Service Summary window. This window provides a list of each virtual channel defined within the system and allows the operator to control the activation of one or all channels and events. From this window you can access other windows to select the services for each channel and events for each service.

Service Summary

The Service Summary window lists the virtual channels currently assigned in the system, whether the channel is enabled or disabled, the source transponder signal used to transmit the channel and the associated channel description. From this window you can:

- enable or disable a channel
- add or delete channels
- access the Service Assignment window to edit a channel's parameters.

When you select Service Summary on the Channel menu, the system displays:


Service Summary
Channel On/Off Signal Description
001 On 1 Test Channel 1
002 On 1 New Test Channel 2
003 On 1 Test Channel 3
004 On 1 Test Channel 4
005 On 1 Test Channel 5
006 On 1 Test Channel 6
007 On 1 Test Channel 7
008 On 1 CSL Super 8 Channel
015 On 1 Test Channel 15
016 On 1 Test Channel 16
017 On 1 Test Channel 17
018 On 1 Test Channel 18
021 On 1 Can & U.S.-- Channel 21
022 On 1 Canada -- Channel 22
023 On 1 U.S. -- Channel 23
024 On 1 Ontario -- Channel 24
Completed

Teleport/Administrator	Programmer/Customer
Privilege – Available as setting applicable to complete system	*Privilege* – Recommend this feature be set to Read only.

Channel

This field displays the virtual channel number.

Note that Channel 1 cannot be deleted and is always set to **On**. Channel 1 is often used to download operating system information to decoders. Be sure not to use Channel 1 for any regular broadcast virtual channel service assignments.

On/Off

This field indicates if the channel is enabled (**On**) or disabled (**Off**).

Note that the On/Off state of each channel is color coded for fast identification. Blue/green indicates the channel is **On**. Dark red indicates the channel is **Off**.

For details on how to enable or disable a virtual channel, see *Enable* or *Disable* later in this topic.

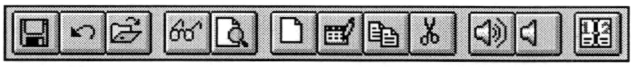
Signal

This field displays the transmitting source for the channel. The number represents the transponder signal carrying the channel.

Description

This field displays the channel description. The description normally identifies the channel's function, service or number. For example, channel 10 might have a description such as **CHN 10**, or **1-4**, which could identify it as virtual channel 10, or as signal 1, encoder 4.

Service Summary Actions



The following actions are available when the Service Summary window is displayed.

Update

Select Update from the Actions menu to update the database with any changes made on this window.

Undo

Select Undo from the Actions menu to abort any changes made to the window and return to the previous values. Only usable if changes have not been saved by selecting Update.

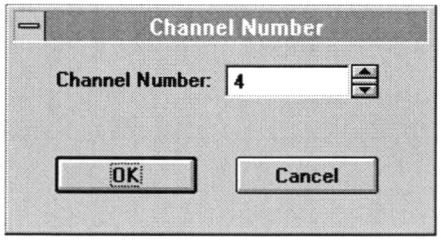
Refresh

Select Refresh from the Actions menu to retrieve current information from the database. The Refresh function provides a way to refresh the information on screen so that you are working with current data in the active window.

Select

To quickly select a virtual channel on the Service Summary window:

1. Click the icon or select Select from the Actions menu. The system displays:

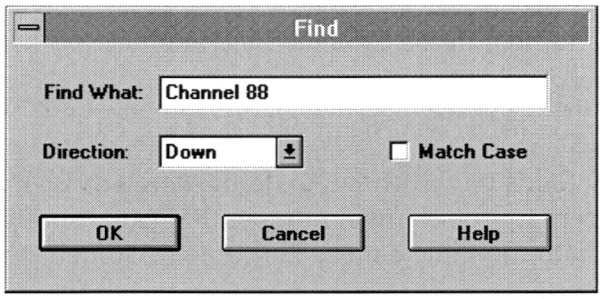


2. Type in the virtual channel number and click **OK**. If the virtual channel exists, the system displays the Service Summary window with the selected virtual channel highlighted.

Find

To quickly find a virtual channel on the Service Summary window:

1. Click the icon or select Find from the Actions menu. The system displays:



2. Type in the complete or partial text that you want to search for in a channel's description.
3. Select the direction (**Up** or **Down**) that you want to search in the virtual channel listing.
4. Click the Match Case check box if you want the search to display exact matches only.
5. Click **OK** to start the search. If a match exists, the system displays and highlights the first virtual channel meeting the search criteria in the Service Summary window.

New/Add to Server

Use this action to access the Service Assignment window and add a brand new virtual channel and its parameters. Click the icon or select New from the Actions menu. For details, see the topic, *Service Assignment*.

Edit

Use this action to access the Service Assignment window and edit a virtual channel's parameters. Double click the virtual channel's row, or highlight the virtual channel on the Service Summary window, and click the icon or select Edit from the Actions menu. For details, see the topic, *Service Assignment*.

Copy

New virtual channels are created by copying the settings from an existing channel and saving the settings with a new channel number. To copy and add a virtual channel:

1. Select a channel number from the list in the Service Summary window, then click the icon, or select Copy from the Actions menu. The system displays a Service Assignment window for the new channel.
2. Enter a new channel number in the Channel field and new packet IDs in the PMT PID and ECM PID fields.

   For more information on PIDs, see *PID* in the *Glossary*.
3. Edit all the necessary fields on the screen to define new service information for the new channel. Except for the channel number, PMT PID and ECM PID, the new channel can contain the same data as the copied channel or any new settings that you provide.

   Refer to the *PID Summary* window to assist in this process.
4. Save the new virtual channel information by selecting the Save to Server icon from the toolbar.

For more details, see *Service Assignment* in the next topic.

Delete

To delete a virtual channel from the Service Summary window:

1. Highlight the channel number in the Service Summary window, then click the icon, or select Delete from the Actions menu. The system displays the message *Do you want to delete channel xx?*
2. Click **OK**. The system removes the virtual channel from the database.

   Note: Any channel can be deleted except channel 1, which is the system bootstrap channel.

Disable

To disable a virtual channel so that it will not broadcast virtual channel services:

1. Highlight the channel number in the Service Summary window, then click the icon, or select Disable from the Actions menu. The system displays the message *Do you want to disable channel xx?*
2. Click **OK**. The system updates the database, changes the On/Off field to **Off** and changes the row's color to dark red.

Enable

To enable a virtual channel so that it will broadcast virtual channel services:

1. Highlight the channel number in the Service Summary window, then click the icon, or select Enable from the Actions menu. The system displays the message *Do you want to enable channel xx?*
2. Click **OK**. The system updates the database, changes the On/Off field to **On** and changes the row's color to cyan.

Virtual Channel Event Queue

Click the icon to display the Event Queue window. The Event Queue window is used to organize event queuing and to schedule services within a virtual channel. Note that a channel's Event Queue window is only available *if the channel is scrambled and the virtual channel has been enabled.*

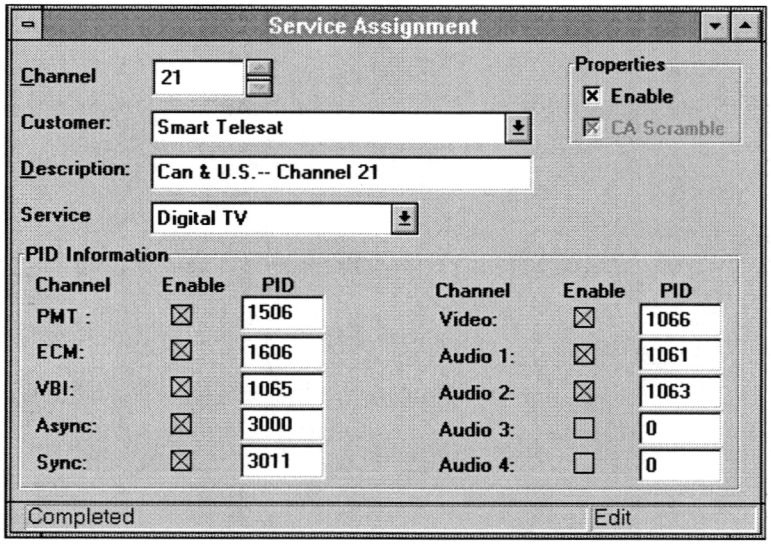
For details, see the topic, *Event Queue*.

Service Assignment

The Service Assignment window is used to select and modify various parameters for a virtual channel, and to define identification information for the channel. When you highlight a channel and select Edit or Copy in the Service Summary window, the system displays a window similar to the one shown below.

Once you display the Service Assignment window for a particular channel, it is not necessary to return to the Service Summary window in order to edit another virtual channel. Simply select Next from the Actions menu to advance to the next assigned virtual channel (i.e., the channel listed directly below that currently selected on the Service Summary window), or select Previous from the Actions menu to display the previous virtual channel (i.e., the channel listed directly above that currently selected on the Service Summary window).

However, if you need to perform another high-level function (i.e., copy, delete, etc.), you need to return to the Service Summary window.



Teleport/Administrator	Programmer/Customer
Privilege – Available as setting applicable to complete system	*Privilege* – Recommend this feature be made available to customers *only if* they have access to their encoders. Otherwise, recommend this feature not be made available to customers.

Channel

This field displays the virtual channel number. You can edit this field only when you create a new channel. Up to **500** channels can be assigned in total. For details on how to add a virtual channel, see *Copy* in the previous topic.

Customer

This field displays the Customer name. Use the Customer field to assign the Customer to the virtual channel and corresponding services. Be sure to select the correct customer name in the Customer field ***before*** you save the virtual channel assignment.

You cannot edit the Customer field in a saved/existing virtual channel. If a Customer field contains the wrong Customer name in a saved/existing virtual channel, you must delete the incorrect record (in the Service summary window) and add a new virtual channel record in its place.

You can only edit this field and select a new customer for the service if you have *not* clicked **Update**. For details, see *Chapter 10, Privilege Administration* in the topic *Customer*.

Description

This field contains the description for the selected channel. It normally identifies the channel's function, service or number. For example, channel 1 may have a description such as "Channel 1" or "1 - 1", which could identify signal 1, encoder 1. You can enter up to 24 ASCII characters to identify the channel. Any ASCII characters that are part of the standard symbol set may be entered.

Service

This field indicates the type of service being transmitted on the channel. A channel can be assigned to one of four categories: **Digital TV, Digital Radio, Lo Speed Data,** or **Hi Speed Data**. Check with your system administrator to determine which category should be selected for the events to be transmitted on the channel. For example, if the events to be broadcast consist of movies, select **Digital TV;** if only music is to be transmitted and no video, select **Digital Radio**.

Properties

Enable ➢ OFF

This field displays the transmission status of the selected channel. Set the check box to **On** to enable transmission on this channel. Set the check box to **Off** to disable transmission on the channel.

CA Scramble

This field is *not* editable even though it displays a greyed-out check box. It indicates if any *one* of the elementary streams (i.e., video, audio, data services) in the virtual channel is encrypted. If at least one stream is encrypted, the check box is set to **ON** but the field is greyed out. Otherwise, the field is set to **OFF**.

Note: The event scheduler operates with a virtual channel only if CA Scramble is activated.

PID Information

Each category in the PID Information area on this window contains an Enable check box and a PID entry text box. The Enable check boxes all work the same in that they act like a *switch* to turn the PID on or off.

Check the PID Summary window for the PID assignments for all services to ensure that the selected number is not used for any other service. Checking the PID summary window also assists you with helpful information when creating the virtual channel.

Following information not available on this version of the system. If you select a PID that is used by another service, the system displays the message *This PID is used by the system.*

Note: If you are assigning *existing* PIDs to the virtual channel, you can use the drag and drop feature to drag PIDs from the PID Summary window and place them into the Service Assignment window.

PMT

This field indicates the PID used by the MPEG Program Map Table (PMT) for the current virtual channel. Enter a unique number in the range from **2** to **8190**.

ECM

This field indicates the PID used by the MPEG Entitlement Control Message (ECM) for the current virtual channel. Enter a unique number in the range from **2** to **8190**.

The following fields are used to control the composition of the virtual channel. The PID must be *identical* to the PID identifier assigned to the device on its configuration window (e.g., *Primary Encoder Audio Settings window*). Check the PID Summary window for the correct number.

VBI

This field indicates the PID used by the elementary stream which carries the VBI channel. Enter a unique number in the range from **2** to **8190**.

Async

This field indicates the PID used by the elementary stream which carries the asynchronous utility data channel. Enter a unique number in the range from **2** to **8190**.

Sync

This field indicates the PID used by the elementary stream which carries the synchronous utility data channel. Enter a unique number in the range from **2** to **8190**.

Video

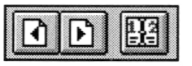
This field indicates the PID used by the elementary stream which carries the video service. Enter a unique number in the range from **2** to **8190**.

Audio 1, 2, 3, 4

These fields indicate the PIDs used by the elementary streams which carry the audio services. Enter a unique number in each in the range from **2** to **8190**.

Note: Two-channel audio is a standard feature on commercial receivers, but four-channel audio is optional. Therefore, decoder output assignments for Audio 3 and Audio 4 are not available on two-channel receivers.

Service Assignment Actions



The following actions are available when the Service Assignment window is displayed.

Update

Select Update from the Actions menu to update the database with any changes made on this window.

Undo

Select Undo from the Actions menu to abort any changes made to the window and return to the previous values. Only usable if changes have not been saved by selecting Update.

Refresh

Select Refresh from the Actions menu to retrieve current information from the database. The Refresh function provides a way to refresh the information on screen so that you are working with current data in the active window.

Previous

Click the icon or select Previous from the Actions menu to move to the Service Assignment window for the previous virtual channel.

Next

Click the icon or select Next from the Actions menu to move to the Service Assignment window for the next virtual channel.

Virtual Channel Event Queue

Click the icon or select Channel Queue from the Actions menu to display the Event Queue window. The Event Queue window is used to organize event queuing and to schedule services within a virtual channel. Note that a channel's Event Queue window is only available *if the channel is scrambled and the virtual channel has been enabled.*

For details, see the topic, *Event Queue*, later in this chapter.

Event Queue

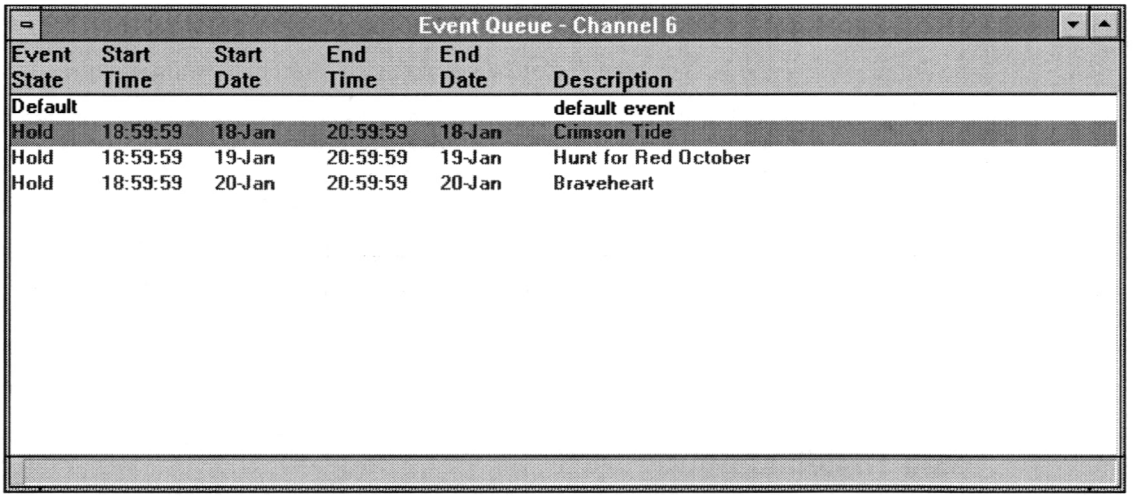
The Event Queue window displays all the program events scheduled for a particular virtual channel and is used to organize event queuing and to schedule services within a virtual channel.

When you select a virtual channel on the Service Summary window (or you have a Service Assignment window open for a particular channel) and you click on the Channel Queue icon, the system displays the channel's Event Queue window similar to the example shown below.

Note that a channel's Event Queue window is only available *if the channel is scrambled and the virtual channel has been enabled.* A virtual channel is enabled on the Service Summary window and a channel's video and audio services are scrambled on the respective video and audio configuration windows for the associated encoder.

Note: When a new virtual channel is created, any associated **default event** has tier bit 0 set. Remember that **tier bit zero should never be assigned to a customer.** The Administrator must clear tier bit 0 on the default event and replace it with the lowest tier bit that was assigned to the customer on the Tier Map – Assignment Map window.

Each default event must have at least *one* tier bit associated with it.



Teleport/Administrator	Programmer/Customer
Privilege – Available as setting applicable to complete system	*Privilege* – Recommend this feature be made available to customers since they need to assign tiers and blackout codes to the event scheduler.

Event State

An event may have one of five states as described in the following table.

State	Description
Active	An **Active** event is one which is currently being broadcast. It may be manually placed in the **Expired** state by selecting Expired from the Actions menu before its end time/date. An **Active** event is normally automatically placed in the **Expired** state by the system when its end time/date has been reached, and then manually requeued for broadcast at a later date.
Queued	A **Queued** event is broadcast (i.e., automatically placed in the **Active** state by the system) when its start time has been reached, at which time it is requeued (if no conflict exists within the program or with other **Queued** events). It may be manually placed in the **Active** state by selecting Activate from the Actions menu or placed on **Hold** by selecting Hold from the Actions menu.
Missed	A **Missed** event is one which has not been broadcast due to a system shutdown, in which case its end time was reached before the system was powered on. If there is no conflict within the program or with other **Queued** events, it may be placed in the **Active** state by selecting Activate on the Actions menu, the **Queued** state by selecting Queued on the Actions menu, or placed on **Hold** by selecting Hold on the Actions menu. Editing a **Missed** event automatically places the event on **Hold**. A **Missed** event has no effect on event scheduling.
Hold	A **Hold** event is one which has been temporarily suspended. If no conflict exists within the event or with other **Queued** events, it may be placed in the **Active** state by selecting Activate on the Actions menu or in the **Queued** state by selecting Queue on the Actions menu. A **Hold** event has no effect on event scheduling.
Expired	An **Expired** event is one which has an end time that is past the current time. In other words, the event has been broadcast. It may be placed in the **Active** state by selecting Activate on the Actions menu, or placed on **Hold** by selecting Hold on the Actions menu. Editing an **Expired** event automatically places the event on **Hold**. An **Expired** event has no effect on event scheduling.

Start Time/Start Date

These fields indicate the date and time (24-hour clock) when the event was/will be activated. For details, see the field descriptions in the topic, *Channel Event*.

End Time/End Date

These fields indicate the date and time (24-hour clock) when the event was/will be concluded. For details, see the field descriptions in the topic, *Channel Event*.

Description

This field indicates the unique reference name assigned to the program event.

Default Event

A Default Event exists for every *scrambled* and *enabled* virtual channel.

You use the default event to set up the virtual channel's default parameters for:

- remote control output states
- fingerprint trigger (and trigger delay and duration)
- authorization levels determined by the program tiers and location codes.
  Note: The Start Date/time and End Date/Time parameters are **not** editable on the default event.

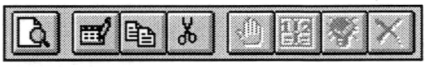
If there is no scheduled event, the characteristics of the channel are set to the parameters defined for the default event.

You can also copy the default event as a starting point for defining an event. For details, see *Copy* later in this topic.

Note: When a new virtual channel is created, any associated **default event** has tier bit 0 set. Remember that **tier bit zero should never be assigned to a customer.** The Administrator must clear tier bit 0 on the default event and replace it with the lowest tier bit that was assigned to the customer on the Tier Map – Assignment Map window.

Each default event must have at least *one* tier bit associated with it.

Event Queue Actions

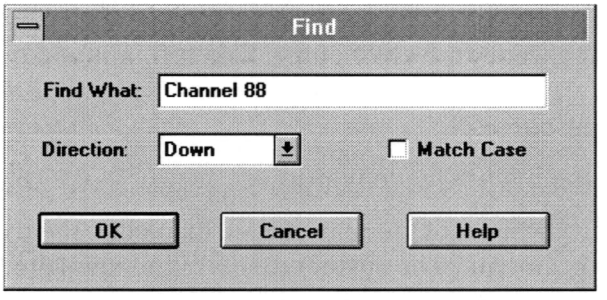


In addition to the standard Update, Undo and Refresh actions, the following actions are available when the Event Queue window is displayed.

Find

To quickly find an event on the Event Queue window:

1. Click the icon or select Find from the Actions menu. The system displays:



2. Type in the complete or partial text you want to look for in the event's description.
3. Select the direction (**Up** or **Down**) you want to search the event queue listing.
4. Click the Match Case check box if you want the search to display exact matches only.
5. Click **OK** to start the search. If a match exists, the system displays and highlights (in the Event Queue window) the first event meeting the search criteria.

Edit

To quickly edit a virtual channel that appears on the Event Queue window:

1. Click the icon or select Edit from the Actions menu. The system displays the Channel Event window.

For details, see the topic *Channel Event*.

Copy

New events are created by copying the settings from an existing event and saving the settings with a new event description. A new event contains the same data as the copied event, except that it is placed in the **Hold** event state.

To copy and add a new event:

1. Select an event from the list in the Event Queue window, then click the icon, or select Copy from the Actions menu. The system displays a Channel Event window for the new event.
2. Enter a new description and edit all the necessary fields on the screen to define the new event.
3. Save the new event information by selecting Update from the Actions menu.

For more details, see Channel Event in the next topic.

Delete

Any event can be deleted except an **Active** entry. **Expired, Missed** or **Hold** events should be deleted whenever possible in order to increase system performance and reduce memory storage resources.

To delete an event from the Event Queue window:

1. Highlight the event in the Event Queue window, then click the icon, or select Delete from the Actions menu. The system displays the message *Do you want to delete event xx?*
2. Click **OK**. The system removes the event from the database.

   Note: Any event can be deleted except an active event and the default event.

Hold

Use this action to place a selected event in the **Hold** state. If the action is not valid for the selected event, the icon will be greyed out. For more information, see the item *Event State* earlier in this topic.

Queue

Use this action to place a selected event in the **Queued** state. If the action is not valid for the selected event, the icon will be greyed out. For more information, see the item *Event State* earlier in this topic.

Activate

Use this action to place a selected event in the **Active** state. If the action is not valid for the selected event, the icon will be greyed out. For more information, see the item *Event State* earlier in this topic.

Expired

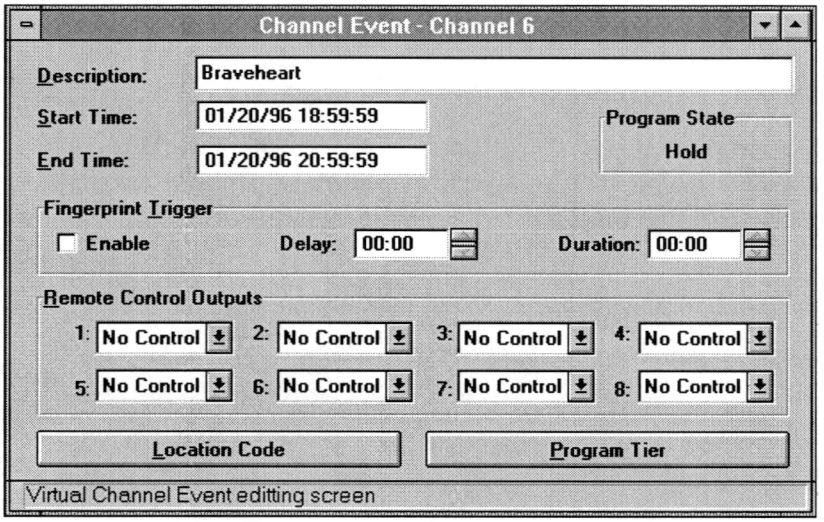
Use this action to place a selected event in the **Expired** state. If the action is not valid for the selected event, the icon will be greyed out. For more information, see the item *Event State* earlier in this topic.

Channel Event

The Channel Event window allows you to control the various parameters that determine the content, timing and destination of a particular event.

When you select a channel on the Event Queue window and select Edit from the Actions menu, the system displays the Channel Event window.

Note: The screen below represents the *Channel Event* window for PCC-3000 *regular* program events. The *Channel Event* window for the default event **does not** contain any modifiable Start Time or End Time fields, and cannot be changed. In addition, the Fingerprint Trigger functions do not operate for the default event.



Note: If you make changes to the Description, Start Time or End Time fields in this window, once you change and update the data you need to *close* the window and then *reopen* it to display the changes. Otherwise, the displayed data may not be valid.

Description

➢ **Default Event**

Type in a 24-character description for each event. This description has no effect on programming, but should be assigned so that each event has a unique reference name. The description can only be changed by an operator with read/write privileges. The preset description is **Default Event** when the PCC-3000 system is first installed and initialized.

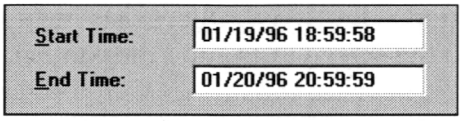
Start Time

The Start Time contains the month/day/year (mm-dd-yy) and the time (based on the 24-hour clock). For example, 1 am and 1 pm are 01:00 and 13:00 hours respectively. Start time may be set to an accuracy of within one second. The time range is from **00:00:00** to **23:59:59** and can be set for up to 2 weeks in advance of the current time. The date is selected by setting the day of the week.

Individual elements of the date and time can be adjusted by highlighting the date or time element and typing in the new value. If you highlight a field (or a range of

fields) all values are wiped out on the first keystroke and you will need to key in all data for the fields.

However, it is not necessary to highlight a time or date element to change it. Simply position the cursor *before* the number you want to change and type in the new value. In the example shown here, you would change the end time day from 20 to 19 by placing the cursor in *front* of the number 2 in the day field and typing in 19.



For an **Active** event, the start time indicating the original time of event activation can only be read (not changed). If an event is forced into the **Active** state, the start time is changed to the current start time, assuming no other event conflicts with the setting. For a **Queued** event, the start time indicates the time the event is to be activated (i.e., placed in the **Active** state). The default start time is the current time based on the time the PCC-3000 system was first initialized.

Note: The Start Time is not applicable for the Default event.

Note 2: Ensure that your Windows settings are in agreement with the **mm-dd-yy** format. Otherwise, unpredictable results may occur. To verify or change your date settings, open the Windows Control Panel, double click on the International icon, and confirm or change your date setting in the Date Format area of the International window.

Note 3: The Start and End time displayed is the server time, *not* local PC time. Verify that the server time is correct before performing any event queue activities. This note also applies to any refresh task activities you may perform.

End Time

The End Time contains the month/day/year (mm-dd-yy) and the time (based on the 24-hour clock). For example, 1 am and 1 pm are 01:00 and 13:00 hours respectively. The end time may be set to an accuracy of within 1 second. The time range is from **00:00:00** to **23:59:59** and can be set up to 2 weeks in advance of the current time. The date is selected by setting the day of the week.

Individual elements of the date and time can be adjusted by typing in the new date or time element to set the new value. For details, see the description in Start Time.

The difference between the start and end time determines the event duration. If an event is forced into the **Expired** state, the end time is not changed to allow for possible immediate re-activation. For an **Active** event, the end time represents the moment the event is to expire (i.e., when it is to be placed in the **Expired** state). The default end time is exactly 24 hours after the default start time.

Note: The End Time is not applicable for the Default event. See also Notes 2 and 3 in the Start Time field above.

Scheduling Conflicts

If a particular event is to be **Queued** for transmission, the PCC-3000 system checks for scheduling conflicts within the event queue (on the Event Queue window) in the following order to ensure that any one of these conflicts do not exist when attempting to set the event to the **Queued** state. If a conflict exists in any one of the cases, an error message is displayed on the screen indicating the conflict. This helps you identify and correct the problem.

- The Start Time is set to a time during which another **Queued** event is set to broadcast (i.e., set to a time that is between the Start Time and End Time of another **Queued** event).
- The End Time is set to a time during which another **Queued** event is set to broadcast (i.e., set to a time that is between the Start Time and End Time of another **Queued** event).
- The Start Time is set to a time during which the **Active** event is on transmission (i.e., set to a time that is between the Start Time and End Time of the **Active** event).
- The End Time is set to a time during which the **Active** event is on transmission (i.e., set to a time that is between the Start Time and End Time of the **Active** event).
- The Start Time is the same as another Active, Queued, or Hold event.
- The End Time is before the current time.

Program State

All events displayed on this window will be in one of five program States: **Active, Queued, Hold, Missed** or **Expired**. Each event is queued in chronological order by start time and date. The Program State can only be changed on the Event Queue window by an operator with read/write privileges. See the Event Queue window for more information on program states.

An **Active** event is normally placed in the **Expired** state and requeued appropriately when its end time has been reached. Setting an **Expired** event to the **Queued** state queues the program to broadcast 7 days from the current time (i.e., the start time of the **Expired** event is advanced 7 days when set to the **Queued** state). Similarly, a **Queued** event is placed in the **Active** state when its start time has been reached.

An **Expired, Missed** or **Hold** event has no impact on event programming. Editing an **Expired** or **Missed** event automatically places it on **Hold**.

Note: **Expired, Missed** or **Hold** events should be deleted regularly on the Event Queue window. This increases system performance and reduces memory storage resources.

Fingerprint Trigger

Enabled ➢ OFF

Enabling the fingerprint trigger forces the decoder to momentarily display its serial number. To set the trigger to occur after the event Start Time, see the description for the fingerprint trigger Delay below.

Note: The Fingerprint Trigger is not applicable for the Default event.

Delay ➢ 00 Hrs 00 Min

Delay is a fingerprint parameter which only has an effect when the Fingerprint Trigger field is set to **On**. The purpose of this field is to enter a delay so that the Fingerprint Trigger occurs a specific interval of time after the Start Time. This interval or period of time is known as the Delay. The range of time for this field is from **00 hours 00 minutes** to **23 hours 59 minutes**.

Note: The Delay is not applicable for the Default event.

Duration ➢ 00 Hrs 00 Min

The Duration field is used to set the period of time that the Fingerprint Trigger is to be active. The range of time for this field is from **00 hours 00 minutes** to **23 hours 59 minutes**. The minimum setting is **00 hours 01 min**.

Note: The Duration is not applicable for the Default event.

Remote Control Outputs

1, 2, 3, 4, 5, 6, 7, 8 ➢ NO CONTROL

This set of fields allows you to determine how the remote control outputs are used.

The PowerVu Commercial Satellite Receiver has TTL open-collector output ports (located on the back panel of the receiver) which can be controlled through the authorization system to act as general-purpose remote control ports. The active state is **Low** (sinking current) and the non-active state is **High** impedance, unless a pull-up resistor is connected to the remote control output pin. When the receiver is not receiving an input signal or is deauthorized, the remote control outputs default to **High**.

Choose an output type for each output independently by selecting from the drop down box.

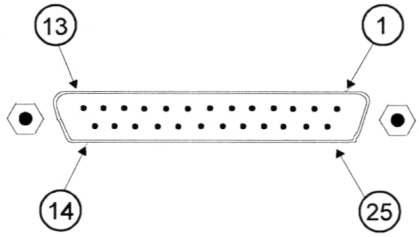
State	Description
High	Output is non-active
Low	Output is active
Pulse High	Pulses output to a high state (+5V) for x milliseconds

State	Description
Pulse Low	Pulses output to a low state (0V) for x milliseconds x = 267 milliseconds (525-line or 60 Hz systems) x = 320 milliseconds (625-line or 50 Hz systems)
No Control	Output remains in the state that it was in after the last control operation. If you set all the control outputs to **No Control**, the PCC-3000 system does not transmit a command to control the outputs, which reduces the authorization lock-up time and the memory overhead. Note: Exercise caution when using the **Pulse High** and **Pulse Low** commands as the PCC-3000 system does not automatically check the previously set state. The pulse commands change the output to the set pulse level (0V or +5V). If the output of the control line is already at the level to be set, only a step results.

Expansion Port/Remote Control Pinouts

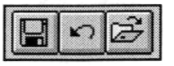
The Expansion Port connector is a 25-pin D-type. It is a multi-function connector that provides utility data at rates up to 19,200 baud, asynchronous, eight remote control ports, and computer diagnostics and remote tuning control.

The pins are numbered as follows:



Pin	Signal	Pin	Signal
1	Chassis Ground	15	Not connected
2	Utility Data Output	16	Remote Control Output 8
3-6	Not connected	17	Remote Control Output 7
7	Signal Ground	18	Remote Control Output 6
8	Not connected	19	Remote Control Output 5
9	Not connected	20	Control Output Pullup: +5V via 1KΩ
10	Not Authorized Flag	21	Control Output Pullup: +5V via 47Ω
11	Not connected	22	Remote Control Output 4
12	Remote Serial Interface Data Receive	23	Remote Control Output 3
13	Remote Serial Interface Data Transmit	24	Remote Control Output 2
14	Not connected	25	Remote Control Output 1

Channel Event Actions



In addition to the standard Update, Undo and Refresh actions, the following actions are available when the Channel Event window is displayed.

Location Code

Click this button or select Location Codes on the Actions menu to display the Location Codes window. Location codes are used to authorize (spotlight) or de-authorize (blackout) decoders assigned to program tiers. For details, see the following topics, *Location Codes* and *Program Tiers (Customer Tier Map)*.

Program Tier

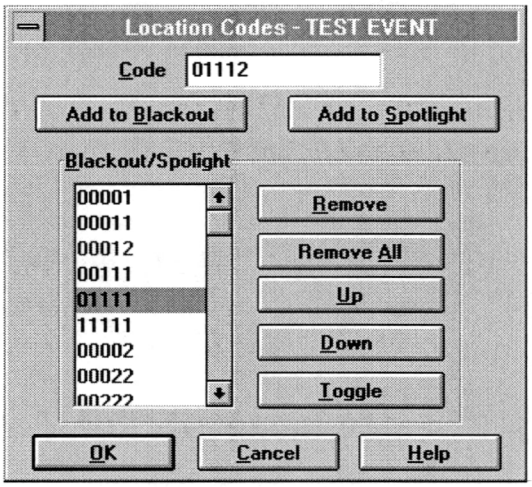
Click this button or select Program Tiers on the Actions menu to display the *Customer Tier Map – Assignment Map* window. Program tiers are used to assign some or all programs so that subscribers can receive the broadcast associated with the program tier. For details, see the following topics, *Program Tiers (Customer Tier Map)*and *Location Codes*.

Location Codes

The Location Codes window allows you to control if decoders assigned to program tiers are authorized (or not authorized) to receive selected events. Location codes are used to *Spotlight* (authorize) decoders that are to receive particular events, or to *Blackout* (deauthorize) decoders that are not to receive particular events.

Location codes have no effect if the decoder is not assigned to a particular tier associated with a virtual channel.

When you click the **Location Code** button on the Channel Event window, or select Location Codes on the Actions menu, the system displays a window similar to the following:



On your monitor the spotlight location codes are displayed in blue and the blackout location codes are displayed in black.

Use the code text box to type in a five-digit decimal number in the range from **1** to **65535** to specify the location code for a decoder which will appear in the Decoder Profile window. If the location code in the Decoder Profile window matches the location code in the Location Codes window, the decoder is either authorized (spotlighted) or unauthorized (blacked out) to receive the event.

The order of precedence is from top to bottom with the bottom location code having the most precedence. Therefore, decoders are authorized or deauthorized depending on the last setting of the specific location code.

The order of precedence can be changed using the **Up** and **Down** buttons. For details, see the button descriptions later in this topic.

Code

Use this field to type in a new location code that you want to add either as a blackout or spotlight location code.

Add to Blackout

Click **Add to Blackout** to place the location code value in the Code field into the Blackout/Spotlight list as a blackout location code.

Add to Spotlight

Click **Add to Spotlight** to place the location code value in the Code field into the Blackout/Spotlight list as a spotlight location code.

Remove

Click the **Remove** button to remove one (or several) location codes from the virtual channel record.

Remove a single location code

Highlight the location code in the Blackout/Spotlight list box and click **Remove**. The location code is removed from the virtual channel record.

Remove multiple location codes

Highlight a location code in the Blackout/Spotlight list box. Hold down the **Ctrl** key and click the left mouse button for all subsequent location codes that you wish to remove, then click **Remove**. All selected location codes are removed from the database.

Note: When you select two or more location codes from the list, the **Up**, **Down** and **Toggle** options are greyed out.

If you change your mind and want to deselect a location code, hold down the **Ctrl** key and click the left mouse button a second time. The highlight disappears and the location code is not removed.

If you want to remove a range of location codes, in the Blackout/Spotlight list box highlight the first location code number, then use the scroll button to move to the last location code number in the range. Hold down the **Shift** key and click the left mouse button on the last location code number in the range. All location codes in the range are selected for removal. Click **Remove**. All selected location codes are removed from the database.

Remove All

Click the **Remove All** button to remove all location code numbers from the virtual channel record.

Up

Select a location code and click the **Up** button to move the location code one row higher up in the Blackout/Spotlight list. Moving a location code *up* in the list reduces its precedence. This means that the location code just below it has a *higher* authorization precedence in the list.

Down

Select a location code and click the **Down** button to move the location code one row lower down in the Blackout/Spotlight list. Moving a location code *down* in the list increases its precedence. This means that the location code just above it has a *lower* authorization precedence in the list.

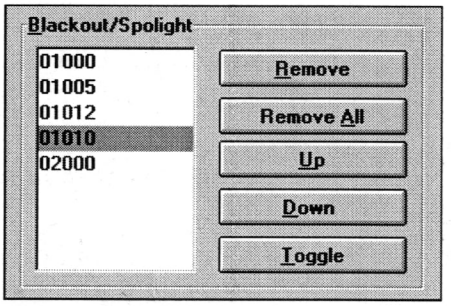
Toggle

Select a location code and click the **Toggle** button to switch the location code between blackout and spotlight. The system displays blackout codes in *Black* and spotlight codes in *Blue*.

Note that you cannot toggle multiple location codes. Each code must be changed individually.

Example

To deauthorize (blackout) a currently authorized decoder with a location code of 01010, select the location code and click **Toggle**. This setting has precedence over any previous settings *above* it in the list. The Blackout/Spotlight list in this example might appear as follows:



This means that all the decoders that are authorized in tiers, having location code **01000** are blacked out. The "Blacked Out" message should appear on the monitor connected to the decoder. However, if the decoder is assigned both location codes 01000 and 02000, it is still authorized.

Location Codes Actions

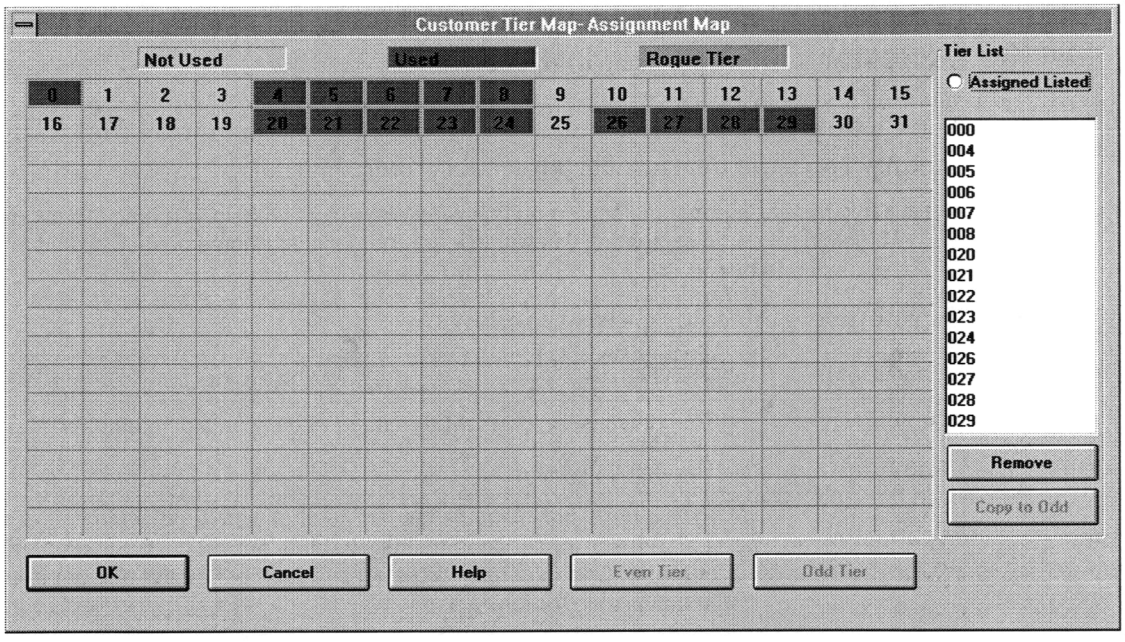
No actions are available when the Location Codes window is displayed.

Customer Tier Map (Program Tiers)

Each event can be assigned a Program Tier number in the range from **000** to **255**. The Customer Tier Map - Assignment Map (Program Tiers) window is used to enable a subscriber to receive a particular event by assigning a program tier to the event. In other words, if a subscriber's program tier matches the active program tier, then the program is authorized and the subscriber receives the program.

For more information on tiers, see *Chapter 8, Decoder Database Control* in the topic *Program Tiers*.

When you click the **Program Tiers** button on the Channel Event window, or select Program Tiers on the Actions menu, the system displays a window similar to the following:



Assign Listed

Set this radio button to **ON** if you want to assign *specific* tiers to receive the event.

Tier List

This box contains all tiers assigned by the user. The preset value is **000**.

Depending on the Assign radio button settings, this list contains either the tiers that are assigned exclusively or the tiers that are ignored while all other tiers are assigned.

Remove

Click the **Remove** button to remove the selected tier number(s) in the Tier List box from the Customer Tier Assignment Map.

Copy to Odd

Button not activated on this window. This button is only active when you access the Tier Map Assignment window from the Decoder Profile window.

Even Tier

Button not activated on this window. This button is only active when you access the Tier Map Assignment window from the Decoder Profile window.

Odd Tier

Button not activated on this window. This button is only active when you access the Tier Map Assignment window from the Decoder Profile window.

How the Customer Tier Map window works

The Customer Tier Map window is designed to let you quickly find, assign or modify a specific tier number for a subscriber.

Note: Only the tier numbers allocated on this window are available to you (i.e., the numbers highlighted and displayed in this window are the *only* tier numbers you are able to see and use to assign to events.

Tier numbers are color coded as follows:

Color	Description
Grey	Tier is available for use **if** the grey tier cell contains a number.
Red	Tier number is in use.
Green	Rogue tier. This indicates the tier number was *removed* from its assigned use by a superuser (or service provider) but has not yet been **deselected** by the operator. Once the user clicks on a rogue tier, the tier number is de-assigned and available for future use.

Assign a Tier Number to a Subscriber

To select and assign a single tier number to a subscriber, simply click on the number in the Tier Map area. The number (and its cell) immediately turns red to indicate it is in use by the system and the tier number is also added to and displayed in the Tier List window area.

To select and assign multiple tier numbers to a subscriber, click on each tier number you want to allocate to the subscriber.

Alternatively, if you want to assign a block of numbers, hold down the left mouse button and drag over the block of tier numbers in the map. As you drag, the numbers within the drag box turn red. As soon as you release the left mouse button and click **OK**, the tier numbers are assigned to the subscriber.

Remove a Tier Number from a Subscriber

To remove a single tier number, simply click on the number in the Tier Map area. The number and cell immediately turn from red to gray to indicate the tier number is not in use by the system. The tier number is removed from the Tier List window area.

To remove multiple tier numbers, click on each tier number you want to remove from a subscriber.

Alternatively, if you want to remove a large group of numbers quickly, highlight a tier number in the Tier List box. Hold down the **Ctrl** key and click the left mouse button for all subsequent tier numbers that you wish to remove, then click **Remove**.

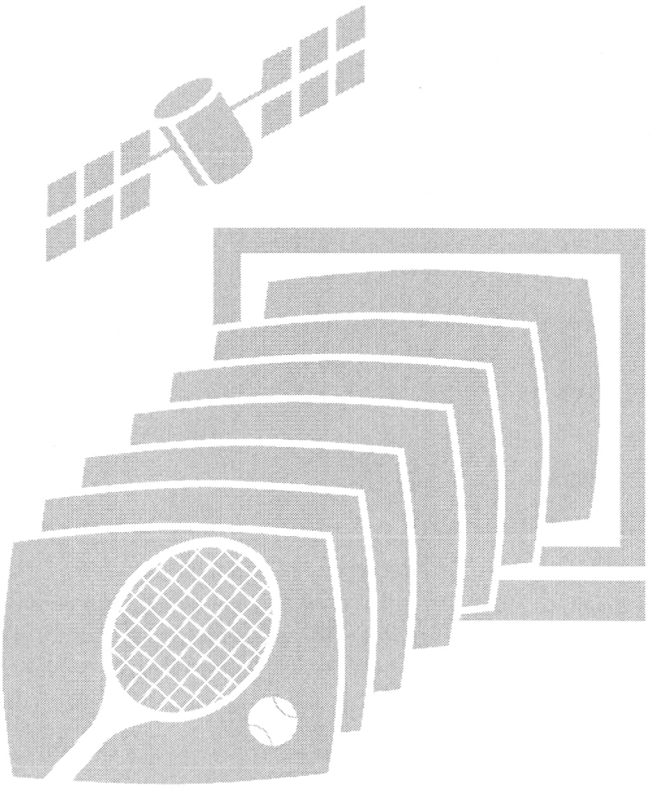
If you change your mind and want to deselect a tier number for removal, hold down the **Ctrl** key and click the left mouse button a second time. The highlight disappears and the tier is not removed.

If you want to remove a range of tier numbers, in the Tier List box highlight the first tier number, then use the scroll button to move to the last tier number in the range. Hold down the **Shift** key and click the left mouse button on the last tier number in the range. All tier numbers in the range are selected for removal. Click **Remove**. All tier numbers in the selected range are removed from the subscriber.

Customer Tier Map – Assignment Map Actions

No actions are available when the Customer Tier Map - Assignment Map window is displayed.

Chapter 7 TRANSACTION AND ALARM LOGS



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Introduction

The PCC-3000 system tracks and records user transactions and alarm diagnostic information.

User Transactions

Logged user transaction data may be used for auditing purposes or system diagnostics. The system allows you to search through the logged transactions for particular transaction types. You can also save a transaction log to an ASCII output file which can later be viewed with any Windows or DOS text editor/viewer.

Alarm Diagnostics

Logged alarm diagnostics data provides information about past and current diagnostic events occurring within the PCC-3000 system. Each diagnostic event is time stamped and recorded as it occurs. If the Alarm Monitor window is being viewed and a diagnostic event occurs **and** the scrolling refresh check box is set to **On**, the event is displayed on the screen. Diagnostic events include such items as communications diagnostics, disk diagnostics, or task completions.

Each diagnostic event is also classified into one of three event types: **Normal**, **Warning**, or **Fail** events.

Normal events are events which are expected to occur during normal operation of the PCC-3000 system. This also includes events which occur when the system recovers from an alarm. An example of a normal event is a task completion.

Warning events are problems which occur that the system recovers from and which do not impede normal operation of the PCC-3000 system.

Fail events are problems which occur that the system cannot recover from.

The PCC-3000 system only maintains the last 50,000 records on file. To preserve a complete record, ensure that the diagnostics log is backed up regularly. Diagnostic logs can only be backed up from the server.

CAUTION

Each window described in this chapter (except for individual encoder and multiplexer diagnostics) creates a log file to record the system transactions and messages. Be sure to check periodically that your system has enough room on the hard drive to accommodate these log files. If the system runs out of disk space for the log files, the system will crash.

Transaction Monitor

The Transaction Monitor window allows you to view the last 50,000 user transactions that were performed. If the refresh check box is set to **On**, the window is automatically updated as each new transaction occurs. Each transaction row contains the following information:

- the date on which the transaction occurred
- the time at which the transaction occurred
- the name of the user that initiated the transaction
- the tty port (or IP Address) of the remote PC used for the transaction
- the transaction type and the operation type
- a description of the transaction (in some cases this might be the first 20 characters of the data that was modified).

When you select Transaction Monitor on the Logging menu, the system displays:

Transaction Monitor

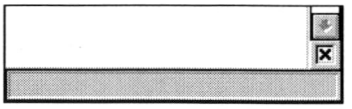
Date	Time	Who	Where	Action	Operation	Description
96-May-13	09:40:25	telesa	192.133.159.070	UPDATE	Uplink	Bandwidth Allocation
96-May-13	09:40:42	telesa	192.133.159.070	UPDATE	Uplink	Bandwidth Allocation
96-May-13	09:41:12	telesa	192.133.159.070	UPDATE	Uplink	Bandwidth Allocation
96-May-13	09:41:39	emc	tty03	UPDATE	Uplink	Signal 1 Primary Encoder 1 A
96-May-13	09:42:16	emc	tty03	UPDATE	Uplink	Signal 1 Primary Encoder 1 A
96-May-13	09:42:45	emc	tty03	UPDATE	Uplink	Signal 1 Primary Encoder 1 A
96-May-13	09:43:04	emc	tty03	UPDATE	Uplink	Signal 1 Primary Encoder 1 A
96-May-13	09:43:28	emc	tty03	UPDATE	Uplink	Signal 1 Primary Encoder 1 A
96-May-13	09:43:44	emc	tty03	UPDATE	Uplink	Signal 1 Primary Encoder 1 A
96-May-13	09:45:11	telesa	192.133.159.070	UPDATE	Uplink	Bandwidth Allocation
96-May-13	09:45:20	telesa	192.133.159.070	UPDATE	Uplink	Bandwidth Allocation
96-May-13	09:45:32	telesa	192.133.159.070	UPDATE	Uplink	Bandwidth Allocation
96-May-13	09:45:42	telesa	192.133.159.070	UPDATE	Uplink	Bandwidth Allocation
96-May-13	09:46:24	telesa	192.133.159.070	UPDATE	Uplink	Bandwidth Allocation
96-May-13	09:46:32	telesa	192.133.159.070	UPDATE	Uplink	Bandwidth Allocation
96-May-13	09:48:40	telesa	192.133.159.070	UPDATE	Uplink	Bandwidth Allocation
96-May-13	09:48:49	telesa	192.133.159.070	UPDATE	Uplink	Bandwidth Allocation
96-May-13	09:48:58	telesa	192.133.159.070	UPDATE	Uplink	Bandwidth Allocation
96-May-13	09:49:04	emc	192.133.159.131	UPDATE	Login	User Login

Wait...0% Completed | Refresh each 5 seconds | Received: 19

Teleport/Administrator	Programmer/Customer
Privilege – Available for complete system	*Privilege* – Recommend this feature *not* be made available to customers. Displayed data relates to *entire* system.

Scrolling Refresh ➢ ON

The Scrolling Refresh check box is in the bottom right corner of the Transaction Monitor window (just below the lower scroll button).

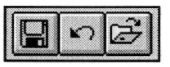


The default setting for this check box is **On**. When the check box is set to **On**, every new user transaction is displayed at the bottom of the window after each screen refresh. Older transactions scroll off the top of the window. To view older transactions that have scrolled off the top of the window, you need to click the check box to **Off**.

If you click the check box to **Off**, then:

- the window is no longer updated with new transactions, but the system continues to store them in the transaction file for viewing afterward
- the scroll bars are activated and you can move back and forth through the list of transactions.

Transaction Monitor Actions

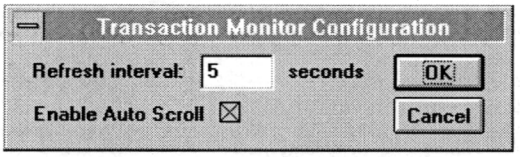


In addition to the standard Update, Undo and Refresh actions, the following action is available when the Transaction Monitor window is displayed.

Configure

To modify the refresh interval and enable auto-scrolling on the Transaction Monitor window:

1. Select Configure from the Actions menu. The system displays:



2. Type in the new value for the refresh rate interval, if required. The default setting is **5** seconds.

   The Refresh Interval determines the refresh rate at which system transaction messages are displayed on the Transaction Monitor window. If you change the interval (e.g., from 5 to 20 seconds), the next time you access the Transaction Monitor window the new refresh rate remains in effect.

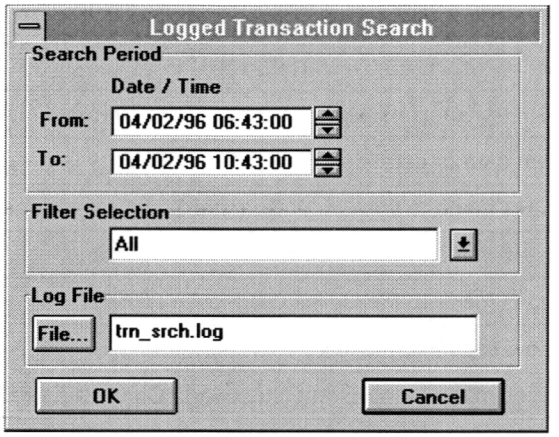
   Note: If you need to improve system response times, it is recommended that you set the Refresh Interval to 20 seconds. Otherwise, when the Transaction Monitor window is open, the system can spend an excessive amount of time updating the Transaction window.

3. Click on the Enable Auto Scroll check box to toggle between **On** and **Off**. When the check box is set to **On**, each new transaction message is displayed at the bottom of the window *after* each screen refresh. The default setting is **On**. For details, see the item *Scrolling Refresh* earlier in this topic.

4. Click **OK** to set the new configuration values.

Logged Transaction Search

The Logged Transaction Search window allows you to search for user transactions logged during a specific time period. When you select Transaction History on the Logging menu, the system displays:



Search Period

From ➢ NOW (minus) 4 HOURS

Use the From field to define the date and time to start displaying user transactions. The date field is based on a calendar year "mm-dd-yy" format. The time field is based on a 24-hour clock "hh-mm-ss" format.

To ➢ SYSTEM TIME – NOW

Use the To field to define the date and time to stop displaying user transactions. The date field is based on a calendar year "mm-dd-yy" format. The time field is based on a 24-hour clock "hh-mm-ss" format.

Filter Selection

You can view specific transaction types in the transaction log for a specified time period. Use the drop down box to select the transaction type. To view all transactions performed during a specified time period, select **ALL**. The selections available are shown below.

Operation Set	Function
ALL	Displays all system transactions performed during the specified time period
BACKUP	Displays all system data or database backup operations
CHANNEL	Displays all changes made to the Virtual Channel Services screens
DECODER	Displays all changes made to the Decoder Database screens
DIAGNOSTIC	Displays all changes made to the Uplink Diagnostic screens
DOWNLOAD	Displays all OS download information
EVENT	Displays all changes made to the Event Queue and Channel Event screens
FREQUENCY	Displays all changes made to the Frequency Assignment screen
LOGIN	Displays all system login attempts
LOGOUT	Displays all system logoffs
MNEMONIC	Reserved for future application
PRIVILEGE	Displays all changes made to the Privilege Administration screen
REFRESH	Displays all changes made to the Refresh Decoder Database screens
RESTORE	Displays all system data or database restore operations
SECURITY	Displays all changes made to the Network Security Control screens
SITEDEFINE	Reserved for future application
TERMINAL	Displays all changes made to the Terminal modification screens
TIME	Displays all changes made to the System Time screen
TRANSACTION	Displays all changes made to the Transaction screens
UPLINK	Displays all changes made to the Uplink Configuration screens

Log File

File...

Transaction logs are regularly saved to disk files by the system. These transaction log files are generally stored in the same directory where the PCC-3000 executable program files reside. Note, however, that your log file directory may vary depending on the way your system is configured.

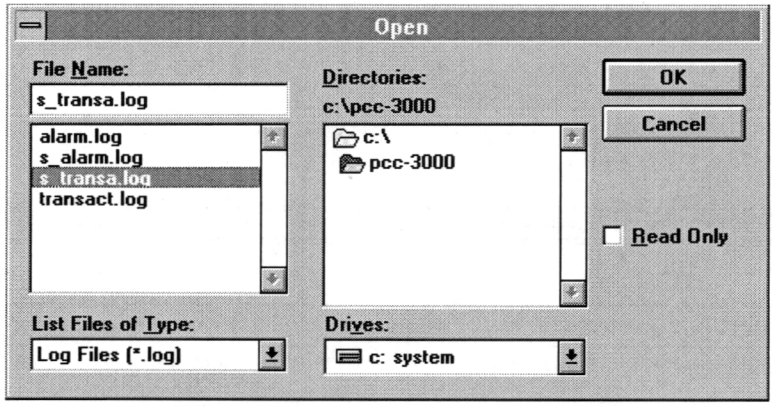
The file names may also vary depending on:

- how your system is configured
- what directories have been assigned
- what file names have been chosen.

As an example, you might find the following files in your system directory:

File Name	Description
alarm.log	Alarm transactions (the most recent 50,000 records) for the PCC-3000 system
s_alarm.log	Alarm transaction search file
transact.log	User transactions (the most recent 50,000 records) for the PCC-3000 system
s_transa.log	User transaction search file

You can open any transaction log file saved to disk by clicking the **File** button. The system displays:



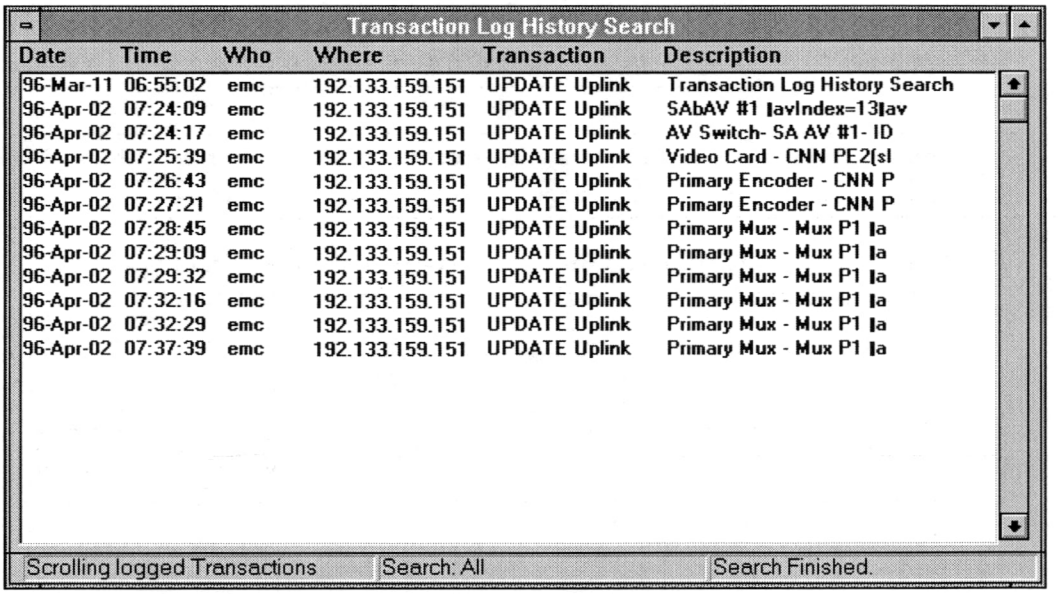
1. If required, use the Drives box to select the drive where the file is located and the Directories box to select the directory where the file is located.
2. Select the file you want to open from the File Name box.
3. Click **OK**. The system displays the Transaction Log History Search window. For details, see the next topic.

Transaction Log History Search

The Transaction Log History Search window allows you to view all transactions (or transactions of a particular type) that were performed during the period defined in the From and To fields on the Logged Transaction Search window. Each transaction row contains the following information:

- the date on which the transaction occurred
- the time at which the transaction occurred
- the name of the user that initiated the transaction
- the tty port (or IP Address) used for the transaction
- the transaction type
- a description of the transaction (in some cases this might be the first 20 characters of the data that was modified).

When you use the Logged Transaction Search window to search for and select transaction records (and one or more records are found), the system displays:


Transaction Log History Search
Date Time Who Where Transaction Description
96-Mar-11 06:55:02 emc 192.133.159.151 UPDATE Uplink Transaction Log History Search
96-Apr-02 07:24:09 emc 192.133.159.151 UPDATE Uplink SAbAV #1 lavIndex=13lav
96-Apr-02 07:24:17 emc 192.133.159.151 UPDATE Uplink AV Switch- SA AV #1- ID
96-Apr-02 07:25:39 emc 192.133.159.151 UPDATE Uplink Video Card - CNN PE2(sl
96-Apr-02 07:26:43 emc 192.133.159.151 UPDATE Uplink Primary Encoder - CNN P
96-Apr-02 07:27:21 emc 192.133.159.151 UPDATE Uplink Primary Encoder - CNN P
96-Apr-02 07:28:45 emc 192.133.159.151 UPDATE Uplink Primary Mux - Mux P1 la
96-Apr-02 07:29:09 emc 192.133.159.151 UPDATE Uplink Primary Mux - Mux P1 la
96-Apr-02 07:29:32 emc 192.133.159.151 UPDATE Uplink Primary Mux - Mux P1 la
96-Apr-02 07:32:16 emc 192.133.159.151 UPDATE Uplink Primary Mux - Mux P1 la
96-Apr-02 07:32:29 emc 192.133.159.151 UPDATE Uplink Primary Mux - Mux P1 la
96-Apr-02 07:37:39 emc 192.133.159.151 UPDATE Uplink Primary Mux - Mux P1 la
Scrolling logged Transactions
Search: All
Search Finished.

Teleport/Administrator	Programmer/Customer
Privilege – Available for complete system	*Privilege* – Recommend this feature *not* be made available to customers. Displayed data relates to *entire* system.

Logged transactions can also be viewed using any Windows or DOS text editor or viewer. Locate the file that you want to examine and open the file in the editor for viewing or printing.

The logged transactions information can also be imported into a spreadsheet or word processor for use in preparing reports and other audit documents.

Alarm Monitor

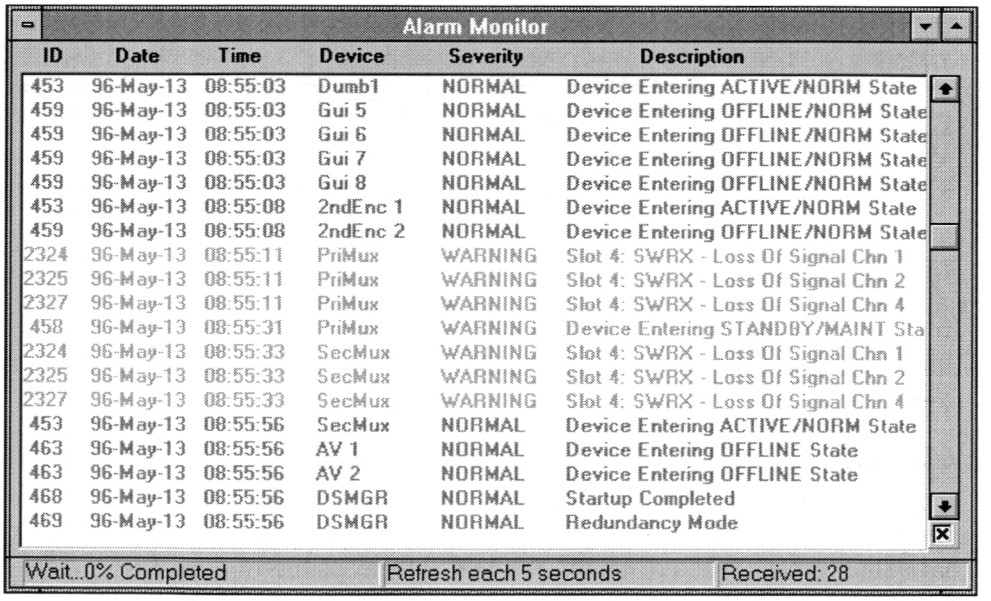
The Alarm Monitor window allows you to view up to the last 50,000 alarm messages generated by the system. If the refresh check box is set to **On**, the window is automatically updated as each new alarm event occurs. Each alarm row contains the following information:

- alarm message ID number – a number ranging from 0 to 3999
- the date on which the condition occurred
- the time at which the condition occurred
- name of the device (or process – sometimes referred to as a task) that reported the diagnostic condition. For more information, see the text and charts on the following page, or refer to your system Diagnostics Alarm Messages Guide.
- type of alarm message, which may be one of the following:

Type	Description
WARNING	A warning message. This is a recoverable system fault which does not affect operation.
NORMAL	A status message. This is a normal system transition occurrence or recovery from a Warning situation.
FAIL	A message indicating that the task has failed. This is a system failure that is non-recoverable.
DEBUG	A system message used to help S-A technicians trace and correct system problems.

- description of the alarm condition.

When you select Alarm Monitor on the Logging menu, the system displays:


Alarm Monitor
ID Date Time Device Severity Description
453 96-May-13 08:55:03 Dumb1 NORMAL Device Entering ACTIVE/NORM State
459 96-May-13 08:55:03 Gui 5 NORMAL Device Entering OFFLINE/NORM State
459 96-May-13 08:55:03 Gui 6 NORMAL Device Entering OFFLINE/NORM State
459 96-May-13 08:55:03 Gui 7 NORMAL Device Entering OFFLINE/NORM State
459 96-May-13 08:55:03 Gui 8 NORMAL Device Entering OFFLINE/NORM State
453 96-May-13 08:55:08 2ndEnc 1 NORMAL Device Entering ACTIVE/NORM State
459 96-May-13 08:55:08 2ndEnc 2 NORMAL Device Entering OFFLINE/NORM State
2324 96-May-13 08:55:11 PriMux WARNING Slot 4: SWRX - Loss Of Signal Chn 1
2325 96-May-13 08:55:11 PriMux WARNING Slot 4: SWRX - Loss Of Signal Chn 2
2327 96-May-13 08:55:11 PriMux WARNING Slot 4: SWRX - Loss Of Signal Chn 4
458 96-May-13 08:55:31 PriMux WARNING Device Entering STANDBY/MAINT Sta
2324 96-May-13 08:55:33 SecMux WARNING Slot 4: SWRX - Loss Of Signal Chn 1
2325 96-May-13 08:55:33 SecMux WARNING Slot 4: SWRX - Loss Of Signal Chn 2
2327 96-May-13 08:55:33 SecMux WARNING Slot 4: SWRX - Loss Of Signal Chn 4
453 96-May-13 08:55:56 SecMux NORMAL Device Entering ACTIVE/NORM State
463 96-May-13 08:55:56 AV 1 NORMAL Device Entering OFFLINE State
463 96-May-13 08:55:56 AV 2 NORMAL Device Entering OFFLINE State
468 96-May-13 08:55:56 DSMGR NORMAL Startup Completed
469 96-May-13 08:55:56 DSMGR NORMAL Redundancy Mode
Wait...0% Completed
Refresh each 5 seconds
Received: 28

Teleport/Administrator	Programmer/Customer
Privilege – Available for complete system	*Privilege* – Recommend this feature *not* be made available to customers. Displayed data relates to *entire* system.

Device or Process

The following devices or processes may appear on the Alarm Monitor window.

Device

The device name is the eight-character name you defined in the configuration window for the encoder, multiplexer, or audio/video switcher.

The examples in the illustration below show some possible device names.

Device	Description
ENC1P1	Encoder 1 Primary 1
AVS 01	Audio Video Switcher 1
MUX P1	Multiplexer Primary 1

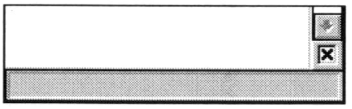
Process

In the case of a process reporting an error, the six to eight characters represent the process name only. Each of the following process names is useful to S-A Customer Service to assess system diagnostic information.

Process	Process	Process	Process
SHMMGR	DSMGR	UNSOL	EMMMGR
LOGMON	BROAD	ADPCOL	EVTEXE
OMGR	CBI01 to CBI06	ADPMGR	03SCR
OSRV	AVSIO	REFRESH	04SCR
DEVMGR			

Scrolling Refresh ➢ ON

In the bottom right corner of the Alarm Monitor window (just below the lower scroll button) is the Scrolling Refresh check box.

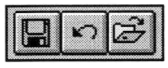


The default setting for this check box is **On**. When the check box is set to **On**, every new alarm message is displayed at the bottom of the window after each screen refresh. Older messages scroll off the top of the window.

If you click the check box to **Off**, then:

- the window is no longer updated with new alarms, but the system continues to store them in the alarm file for later viewing
- the scroll bars are activated and you can move back and forth through the list of alarm messages.

Alarm Monitor Actions

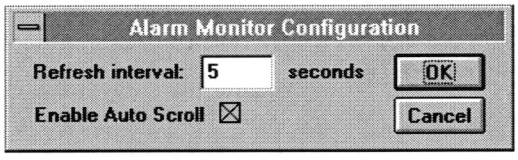


In addition to the standard Update, Undo and Refresh actions, the following action is available when the Alarm Monitor window is displayed.

Configure

To modify the refresh interval and enable auto-scrolling on the Alarm Monitor window:

1. Select Configure from the Actions menu. The system displays:



2. Type in the new value for the refresh rate interval, if required. The default setting is **5** seconds.

   The Refresh Interval determines the refresh rate at which alarm messages are displayed on the Alarm Monitor window. If you change the interval (e.g., from 5 to 20 seconds), the next time you access the Alarm Monitor window the new refresh rate remains in effect.

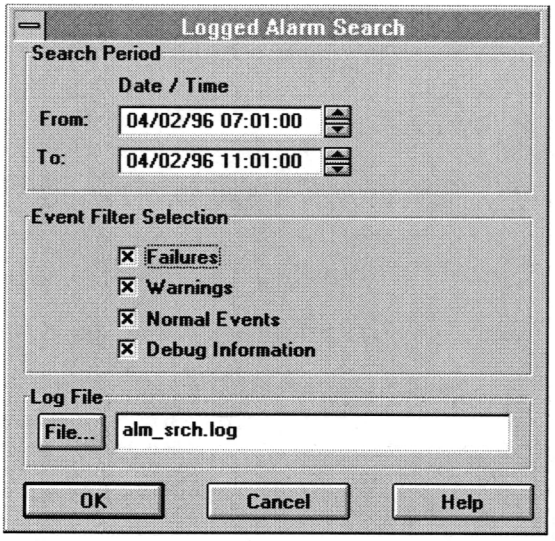
   Note: If you need to improve system response times, it is recommended that you set the Refresh Interval to 20 seconds. Otherwise, when the Alarm Monitor window is open, the system can spend an excessive amount of time updating the Alarm window.

3. Click on the Enable Auto Scroll check box to toggle between **On** and **Off**. When the check box is set to **On**, each new alarm message is displayed at the bottom of the window *after* each screen refresh. The default setting is **On**. For details, see the item *Scrolling Refresh* earlier in this topic.

4. Click **OK** to set the new configuration values.

Logged Alarm Search

The Logged Alarm Search window allows you to search for alarms logged during a specific time period. When you select Alarm History on the Logging menu, the system displays:



Search Period

From ➢ NOW (minus) 4 HOURS

Use the From field to define the date and time to start displaying alarm messages. The date field is based on a calendar year "mm-dd-yy" format. The time field is based on a 24-hour clock "hh-mm-ss" format.

To ➢ SYSTEM TIME – NOW

Use the To field to define the date and time to stop displaying alarm messages. The date field is based on a calendar year "mm-dd-yy" format. The time field is based on a 24-hour clock "hh-mm-ss" format.

Display Diagnostic Events in the Search

You can view specific alarm types in the alarm log for a specified time period. Use the check boxes to select one or more alarm message types. To view all alarm messages generated by the system during a specified time period, set all check boxes to **On**.

Failures ➢ ON

Set the check box to **On** to display Fail events.

☒ Warnings ➢ ON

Set the check box to **On** to display Warning events.

☒ Normal Events ➢ ON

Set the check box to **On** to display Normal events.

☒ Debug Information ➢ ON

Set the check box to **On** to display Debug events.

Log File

☐ File...

Alarm message logs are regularly saved to disk files by the system. These alarm log files are generally stored in the same directory where the PCC-3000 executable program files reside. Note, however, that your log file directory may vary depending on the way your system is configured.

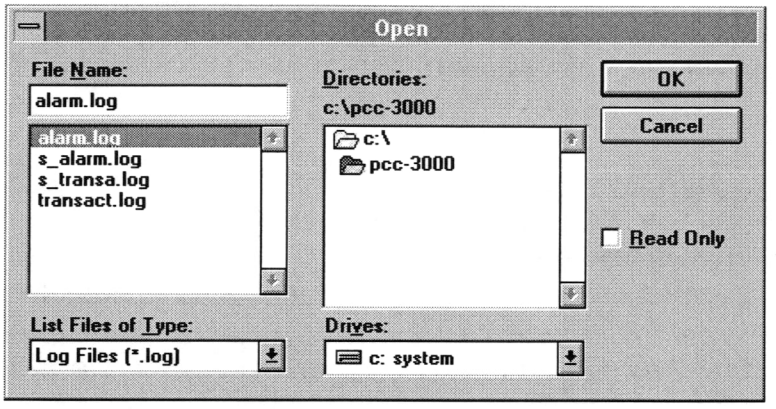
The file names may also vary depending on:

- how your system is configured
- what directories have been assigned
- what file names have been chosen.

As an example, you might find the following files in your system directory:

File Name	Description
alarm.log	Alarm transactions (the most recent 50,000 records) for the PCC-3000 system
s_alarm.log	Alarm transaction search file
transact.log	User transactions (the most recent 50,000 records) for the PCC-3000 system
s_transa.log	User transaction search file

You can open any alarm log file saved to disk by clicking the **File** button. The system displays:



1. If required, use the Drives box to select the drive where the file is located and the Directories box to select the directory where the file is located.
2. Select the file you want to open from the File Name box.
3. Click **OK**. The system displays the Alarm Log History Search window. For details, see the next topic.

Alarm Log History Search

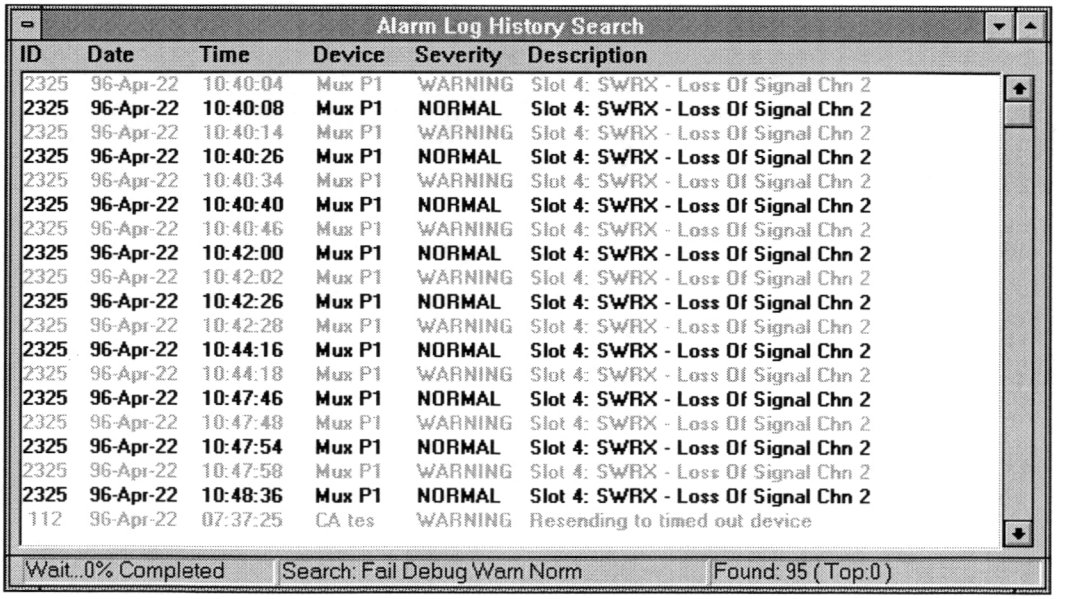
The Alarm Log History Search window allows you to view all alarms (or alarm messages of a particular type) that were generated during the period defined in the From and To fields on the Logged Alarm Search window. Each message row contains the following information:

- alarm message ID number – a number ranging from 0 to 3999
- the date on which the condition occurred
- the time at which the condition occurred
- name of the device (or process – sometimes referred to as a task) that reported the diagnostic condition. For more information, see the text and charts on the following page, or refer to your system Diagnostics Alarm Messages Guide.
- Severity (or type) of alarm message, which may be one of the following:

Type	Description
WARNING	A warning message. This is a recoverable system fault which does not affect operation.
NORMAL	A status message. This is a normal system transition occurrence.
FAIL	A message indicating that the task has failed. This is a system failure that is non-recoverable.
DEBUG	A system message used to help S-A technicians trace and correct system problems.

- description of the alarm condition.

When you use the Logged Alarm Search window to search for and select alarm message records (and one or more records are found), the system displays:


Alarm Log History Search
ID Date Time Device Severity Description
2325 96-Apr-22 10:40:04 Mux P1 WARNING Slot 4: SWRX - Loss Of Signal Chn 2
2325 96-Apr-22 10:40:08 Mux P1 NORMAL Slot 4: SWRX - Loss Of Signal Chn 2
2325 96-Apr-22 10:40:14 Mux P1 WARNING Slot 4: SWRX - Loss Of Signal Chn 2
2325 96-Apr-22 10:40:26 Mux P1 NORMAL Slot 4: SWRX - Loss Of Signal Chn 2
2325 96-Apr-22 10:40:34 Mux P1 WARNING Slot 4: SWRX - Loss Of Signal Chn 2
2325 96-Apr-22 10:40:40 Mux P1 NORMAL Slot 4: SWRX - Loss Of Signal Chn 2
2325 96-Apr-22 10:40:46 Mux P1 WARNING Slot 4: SWRX - Loss Of Signal Chn 2
2325 96-Apr-22 10:42:00 Mux P1 NORMAL Slot 4: SWRX - Loss Of Signal Chn 2
2325 96-Apr-22 10:42:02 Mux P1 WARNING Slot 4: SWRX - Loss Of Signal Chn 2
2325 96-Apr-22 10:42:26 Mux P1 NORMAL Slot 4: SWRX - Loss Of Signal Chn 2
2325 96-Apr-22 10:42:28 Mux P1 WARNING Slot 4: SWRX - Loss Of Signal Chn 2
2325 96-Apr-22 10:44:16 Mux P1 NORMAL Slot 4: SWRX - Loss Of Signal Chn 2
2325 96-Apr-22 10:44:18 Mux P1 WARNING Slot 4: SWRX - Loss Of Signal Chn 2
2325 96-Apr-22 10:47:46 Mux P1 NORMAL Slot 4: SWRX - Loss Of Signal Chn 2
2325 96-Apr-22 10:47:48 Mux P1 WARNING Slot 4: SWRX - Loss Of Signal Chn 2
2325 96-Apr-22 10:47:54 Mux P1 NORMAL Slot 4: SWRX - Loss Of Signal Chn 2
2325 96-Apr-22 10:47:58 Mux P1 WARNING Slot 4: SWRX - Loss Of Signal Chn 2
2325 96-Apr-22 10:48:36 Mux P1 NORMAL Slot 4: SWRX - Loss Of Signal Chn 2
112 96-Apr-22 07:37:25 CA tes WARNING Resending to timed out device
Wait...0% Completed
Search: Fail Debug Warn Norm
Found: 95 (Top:0)

Teleport/Administrator	Programmer/Customer
Privilege – Available for complete system	*Privilege* – Recommend this feature *not* be made available to customers. Displayed data relates to *entire* system.

Logged alarms can also be viewed using any Windows or DOS text editor or viewer. Locate the file that you want to examine and open the file in the editor for viewing or printing.

The logged alarms information can also be imported into a spreadsheet or word processor for use in preparing reports and other audit documents.

Encoder Diagnostics

The Encoder Diagnostics window allows you to view all hardware alarm messages generated by the system (and in the device's buffer) for all cards connected to *a specific encoder*.

Note: The diagnostic information is *only* for the encoder which appears in the active window. If you want to view diagnostics for all encoders (devices), use the Alarm Monitor window.

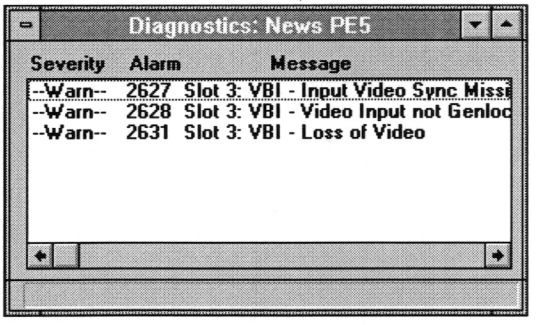
Each alarm row contains the following information:

- type of alarm message, which may be one of the following:

Type	Description
WARN	A warning message. This is a recoverable system fault which does not affect operation.
NORMAL	A status message. This is a normal system transition occurrence or recovery from a Warning situation.
FAIL	A message indicating that the task has failed. This is a system failure that is non-recoverable.
DEBUG	A system message used to help S-A technicians trace and correct system problems.

- alarm message ID number – a number ranging from 0 to 3999
- slot number of the card which generated the alarm
- name of the device that reported the diagnostic condition and a description of the alarm condition.

When you click the **Diagnostics** button on an Encoder Configuration window, the system displays a window similar to the one shown below.


Diagnostics: News PE5
Severity Alarm Message
--Warn-- 2627 Slot 3: VBI - Input Video Sync Miss
--Warn-- 2628 Slot 3: VBI - Video Input not Genloc
--Warn-- 2631 Slot 3: VBI - Loss of Video

Teleport/Administrator	Programmer/Customer
Privilege – Available for complete system	*Privilege* – Recommend this feature be made available to customers *only* if they have access to their own encoders.

For more information on encoder diagnostics and alarms, see the topic *Alarm Monitor* earlier in this chapter.

Encoder Diagnostics Actions

There are no actions available when an Encoder Diagnostics window is displayed.

Multiplexer Diagnostics

The Multiplexer Diagnostics window allows you to view all hardware alarm messages generated by the system (and in the device's buffer) for all cards connected to *a specific multiplexer*.

Note: The diagnostic information is *only* for the multiplexer which appears in the active window. If you want to view diagnostics for all multiplexers (and other devices), use the Alarm Monitor window.

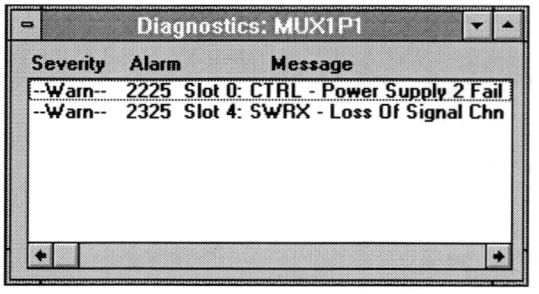
Each alarm row contains the following information:

- type of alarm message, which may be one of the following:

Type	Description
WARN	A warning message. This is a recoverable system fault which does not affect operation.
NORMAL	A status message. This is a normal system transition occurrence or recovery from a Warning situation.
FAIL	A message indicating that the task has failed. This is a system failure that is non-recoverable.
DEBUG	A system message used to help S-A technicians trace and correct system problems.

- alarm message ID number – a number ranging from 0 to 3999
- slot number of the card which generated the alarm
- name of the device that reported the diagnostic condition and a description of the alarm condition.

When you click the **Diagnostics** button on a Multiplexer Configuration window, the system displays a window similar to the one shown below.


Diagnostics: MUX1P1
Severity Alarm Message
--Warn-- 2225 Slot 0: CTRL - Power Supply 2 Fail
--Warn-- 2325 Slot 4: SWRX - Loss Of Signal Chn

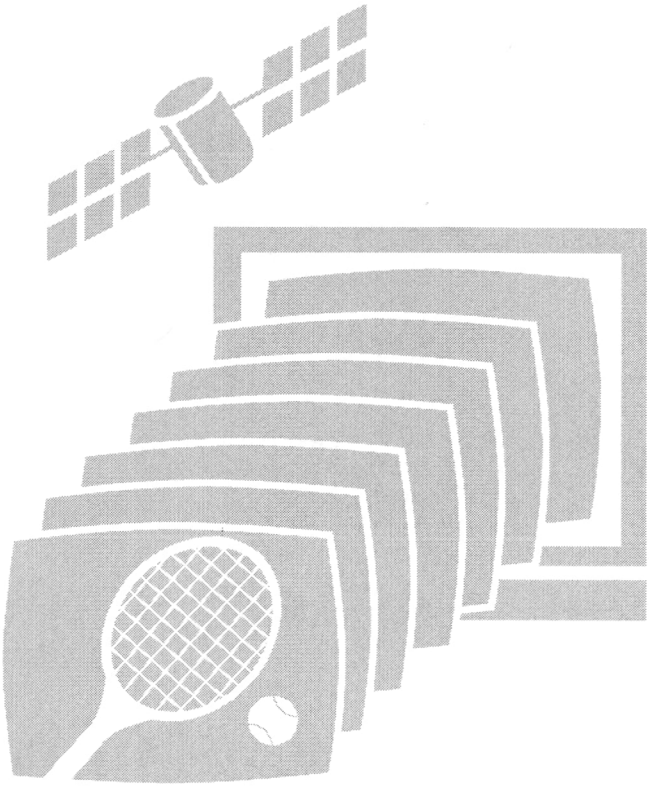
Teleport/Administrator	Programmer/Customer
Privilege – Available for complete system	*Privilege* – Recommend this feature *not* be made available to customers. Displayed data relates to *entire* system.

For more information on multiplexer diagnostics and alarms, see the topic *Alarm Monitor* earlier in this chapter.

Multiplexer Diagnostics Actions

There are no actions available when an Encoder Diagnostics window is displayed.

Chapter 8 DECODER DATABASE CONTROL



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Introduction

This chapter contains detailed information on the organization and maintenance of a database for decoder records.

Decoder Database Records

A decoder database record contains all the information required to address a decoder for service authorization. Access to each individual record profile in the database allows you to define the level of service for a decoder.

Records are loaded into the database by your service provider from a distribution disk.

Operator knowledge of the secret serial numbers (SSNs) is not required. However, if this information is known, records can be added by the operator via manual keyboard entry.

Decoder Database Summary

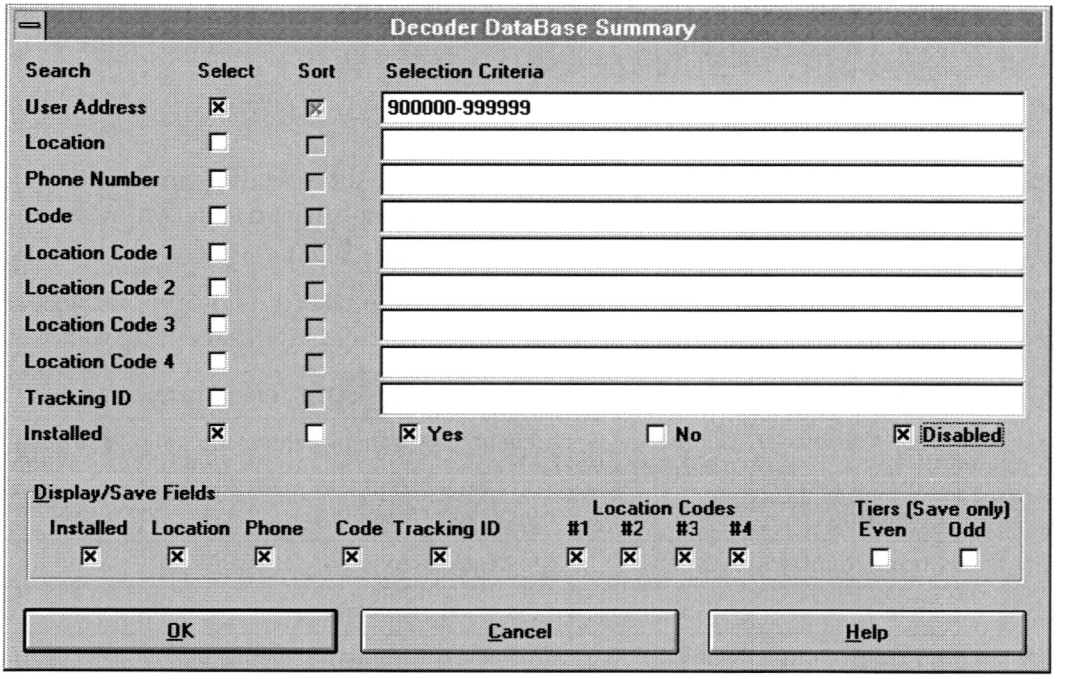
The Decoder Database Summary window is used to search the decoder database for decoders which match specific search criteria. A successful search creates a select database which appears in the Decoder Summary window.

The system retains any selection changes that you make to the settings in this window until they are later changed by you (or another user working on your computer).

Once the select decoder database is ready, the selected records can be edited globally using the Decoder Global Change window, or individually using the Decoder Profile window.

Refer to the application note (*Application Note E – Database Search and Global Change Features*) in the *Appendices* for examples of simple and complex search possibilities.

When you select Decoder Database from the Decoder menu , the system displays:



Search

The fields listed below the **Search** heading correspond to most of the fields in the Decoder Profile window. Setting the check boxes **ON** or **OFF** for the associated field and defining the optional search criteria determines which records will be chosen for the select database.

For more information on definitions for these fields, see the topic Decoder Profile window.

Select ➢ OFF

Click the check box to **ON** to include the corresponding field (and any selection criteria defined for the field) as a search item. If the check box is set to **OFF**, the system ignores any parameters that might be specified for the field.

Sort ➢ OFF

Click the check box to **ON** to sort the search results. Depending on the search field type, the system places the results in alphabetical order (A to Z, or a to z) or numerical order (0 to 9) in the select database. If the check box is set to **OFF**, the system does not sort the field results.

Note: If User Address is chosen as a select field and no other field is defined as a sort field, the system automatically defaults to a sort on the User Address.

If you define two or more fields as sort fields, the system sorts according to the hierarchy shown on screen. For example, if you define Code, Location Code 1 and Location Code 2 as sort fields, the system first sorts all records by Code, then subsorts all Location Code 1 records within the Code sort, then finally subsorts all Location Code 2 records.

Selection Criteria

This field allows you to define the values for the specific search criteria for each of the different search items. It can be used to specify an exact value, a range of values or a combination of both.

There are some delimiting characters you can use (depending on the search field type) to refine the search criteria. All search fields will accept up to 80 characters.

Search Field	Type	Delimiting Characters
User Address	Numeric (Decimal)	, (comma) - (hyphen) > (greater than) < (less than) = (equals)
Location	ASCII	* (asterisk) , (comma)
Phone Number	ASCII	* (asterisk) , (comma)
Code	ASCII	* (asterisk) , (comma)
Location Code 1,2,3,4	Numeric (Decimal)	, (comma) - (hyphen) > (greater than) < (less than) = (equals)
Tracking ID	Numeric (Decimal & Hexadecimal)	, (comma) - (hyphen) > (greater than) < (less than) = (equals)

Installed Row

The Installed row only offers you the choices defined by the check boxes.

Yes = select all installed decoders
No = select decoders *not* installed
Disable = select disabled decoders.

Note: One, two, or all three can be checked on. For example, if all three check boxes are checked **On**, the system searches for *all* installed decoders, *all* decoders not installed, and *all* disabled decoders in the database.

Example 1

If you want to search for **only** decoder records 100010 and 200202:

Enter **100010, 200202** in the Selection Criteria field of the User Address row.

Example 2

If you want to search for **all** decoder records between 100010 and 200000:

Enter **100010 - 200000** in the Selection Criteria field of the User Address row.

Example 3

If you want to search for the individual decoder record 100010 **in addition to** those between 200000 and 300000:

Enter **100010, 200000 - 300000** in the Selection Criteria field of the User Address row.

When performing a *character* search in the Location, Phone Number or Code field, the wildcard character "*" (asterisk) may be used to improve search flexibility.

Note: The Location, Phone Number and Code fields are case sensitive and do **not** accept the hyphen, comma, greater than, less than or equal sign delimiters.

Example 4

If you want to search for **all** disabled decoders at **all** locations:

Enter * in the Selection Criteria field of the Location row and click the **Disable** radio button in the Installed row.

Example 5

If you want to search for **all** decoders at all locations starting with **103**:

Enter 103* in the Selection Criteria field of the Location row and click the **Installed** check box to **OFF**.

The order in which records are retrieved may be changed by searching for a range of decoder records first, followed by a search for a specific record.

Example 6

If you want to search for the **first** 500 decoders at **all** locations:

Enter **0 - 500** in the Selection Criteria field of the User Address row.

Then search for **all** decoders within that selected range at **all** locations which are identified by the user-defined code "R&D".

Enter * in the Selection Criteria field of the Location row and **R&D** in the Selection Criteria field of the Code row.

Search flexibility is further enhanced when more than one Search Item is used with its own set of Selection Criteria. Refer to the application note (*Application Note E – Database Search and Global Change Features*) in the *Appendices* for other examples of simple and complex search possibilities.

Display/Save Fields

Use the check boxes in this area of the window to define which fields appear in the Decoder Summary window when the system displays the select database. Except for the User Address field, these fields are the same as the fields offered in the select field portion of the window, although in a slightly different order.

Note that a field can be used as a select field or a sort field, but does not need to be selected as a display field. For example, if you sort the decoder records by telephone number, it is not necessary to select Phone as a display field. This might be helpful if you wish to view or print the records and wish to keep the output as compact as possible.

☒ Tiers (Save Only) ➢ OFF

Use the check boxes in this area of the window to include the even and odd tiers in a file if you choose to save the contents of the Decoder Summary window to a text file. Note that the even and odd tiers will not display in the Database Summary window but will be included in the file if you use the Save option.

Decoder Database Summary Actions

There are no actions available on the Actions menu when the Decoder Database Summary window is displayed.

Click the **OK** button when you have chosen your select fields, selection criteria and sort options. The system displays the search results in the Decoder Summary window.

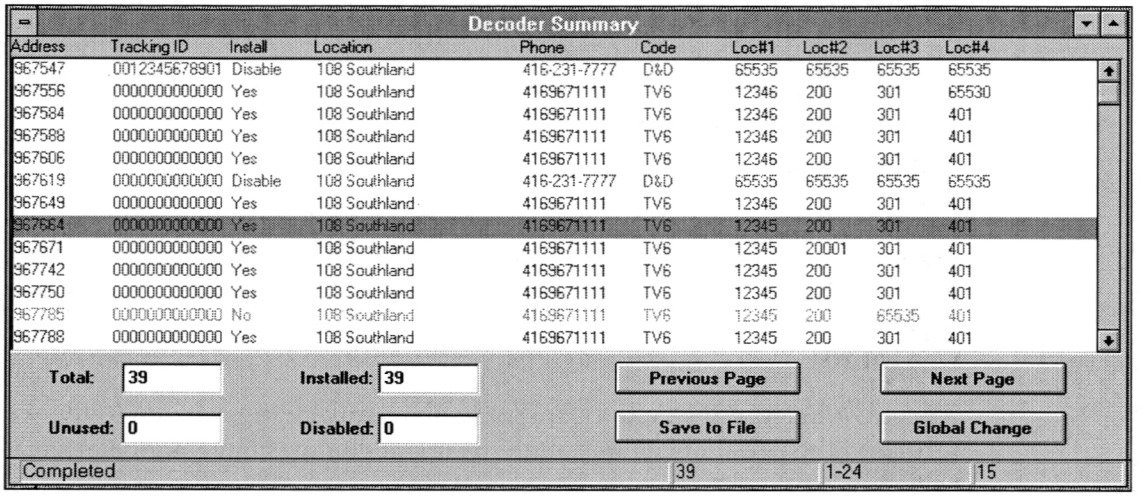
Decoder Summary

The Decoder Summary window is used to:

- access the Decoder Profile window to edit individual decoder records
- access the Decoder Global Change window to edit all records in the select decoder database
- view the select decoder database.

This window displays the total number of decoder records which meet the search criteria and the total number of records installed, not installed, or disabled.

When you start a decoder database search from the Decoder Database Summary window, the system selects all records that meet your selection criteria and then displays a window similar to the following:



The client area of the Decoder Summary window displays the results of the database search 13 records at a time. Note that only the display fields (except for even and odd tiers) you defined on the Decoder Database Summary window appear.

Total

Total number of decoder records found based on the search selection criteria.

Installed

Total number of *installed* decoders found based on the search selection criteria.

Unused

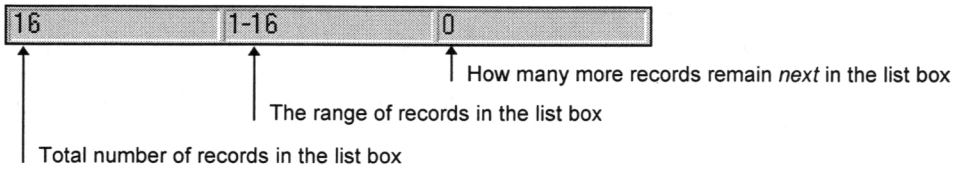
Total number of *uninstalled* decoders found based on the search selection criteria.

Disabled

Total number of *disabled* decoders found based on the search selection criteria.

Status Bar

The three right hand boxes of the status bar provide information on the records displayed in the list box.


16
1-16
0
How many more records remain *next* in the list box
The range of records in the list box
Total number of records in the list box

Decoder Summary Actions

The following actions are available when the Decoder Summary window is displayed. Many actions are accessible on the Actions menu. Some actions are accessible using icons on the toolbar and others are accessible using buttons on the window itself.

Update

Select Update from the Actions menu to update the database with any changes made on this window.

Undo

Select Undo from the Actions menu to abort any changes made to the window and return to the previous values. Only usable if changes have not been saved by selecting Update.

Refresh

Select Refresh from the Actions menu to retrieve current information from the database. The Refresh function provides a method to refresh the information on screen so that you are always working with current data in the active window.

Edit

Click **Edit** to edit an individual decoder record. For details, see Edit Individual Decoder Record later in this topic.

Save to File

Click **Save to File** to save all decoder records which appear on the Decoder Summary window. The select decoder database is saved in ASCII text format. For details, see *Save Decoder Records* later in this topic.

Previous Page

Click **Previous Page** to move to an earlier page of 24 decoder records within the select database. If your select database contains fewer than 24 records, this option is greyed out.

Each page in this window consists of 24 decoder records. Because the window's client area only displays 13 records at a time, use the scroll bar on the right to move up or down the page.

Next Page

Click **Next Page** to move to a later page of 24 decoder records within the select database. If your select database contains fewer than 24 records, this option is greyed out.

Each page in this window consists of 24 decoder records. Because the window's client area only displays 13 records at a time, use the scroll bar on the right to move up or down the page.

Global Change

Click **Global Change** to display the Decoder Global Change window where you can edit all records globally in the select decoder database. For details, see the topic *Decoder Global Change*.

Edit Individual Decoder Record

1. Highlight the decoder you want to edit.
2. Double click or select Edit from the Actions menu. The system displays the Decoder Profile window for the selected decoder.

   For details, see the topic *Decoder Profile*.

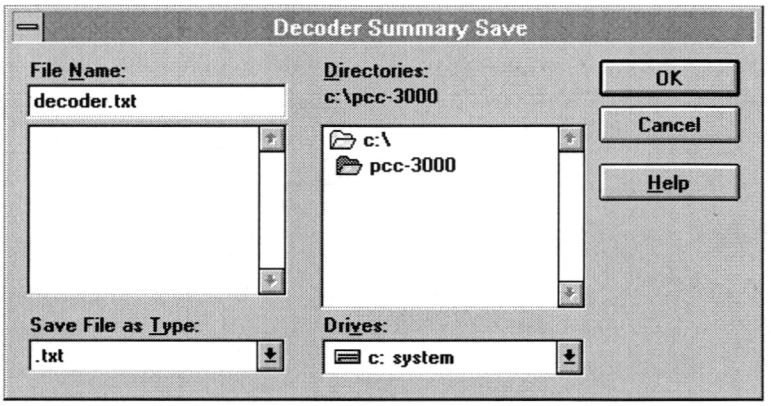
Save Decoder Records

The select decoder database records can be saved to a file in ASCII text format. This file can be read and manipulated by any windows text viewer or text editor. In addition, the file can be imported into an Excel spreadsheet (or similar spreadsheet software) for use in preparing reports and other documents which require the decoder information.

Note: If the Tiers (Save Only) option check boxes were set to **ON** in the Decoder Database Summary window, the tiers information will be included in the output ASCII file (even though the tiers information is not displayed on the Decoder Summary window).

1. Ensure the Decoder Summary window is the active window.

2. Click **Save to File**. The system displays the message *The save function will terminate this window. Do you want to continue?*
3. Click **OK**. The system displays a Decoder Summary Save window similar to the following:

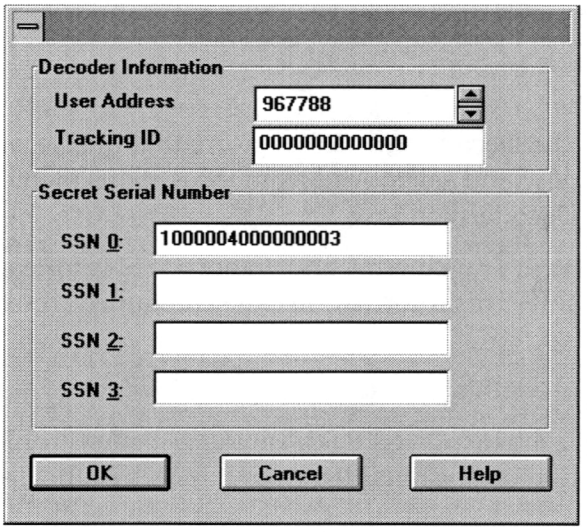


4. Type in a file name and select a directory (or use the defaults) for the file to be saved.
5. Click **OK**. The system reduces the Decoder Summary window to an icon and displays the percentage of completion as the file is saved. When the save is finished, the system displays the message *All decoders saved to file*.
6. Click **OK**.

Add Decoder

In most cases, the majority of decoder records you add to your database will be downloaded from a distribution diskette. However, there may be times when you need to load a decoder *manually* into the system (i.e., the distribution diskette is not available or the data is corrupt).

When you select Add Decoder from the Decoder menu, or select Add from the Actions menu when the Decoder Profile window is the active window, the system displays:



User Address

Use this field to enter a nine-digit User Address number (note that leading zeros are not required). Each decoder record in the database has a User Address which corresponds to the particular decoder.

This number is unique to the decoder and functions very much like a serial number. It can be found on the back of the decoder chassis.

Note: Once you enter and update the decoder's User Address, the number is no longer editable. After that, the User Address number can only be changed by S-A Customer Support personnel.

Tracking ID

Use this field to enter a Tracking ID for the decoder.

Each decoder record has a Tracking ID which corresponds to the particular decoder with the associated User Address. Normally, this 12-digit hexadecimal number is downloaded from the distribution disk when the decoder record is loaded.

The number is unique to the decoder chassis and does not change. It functions very much like an inventory serial number (tracking repair histories, security uses, etc.) and can be found on the back of the decoder chassis. Once a non-zero Tracking ID has been entered into the database, it cannot be edited.

SSN (0 to 3)

Use these fields to enter the secret serial numbers for each of the Broadcaster IDs, if required.

Add Decoder Actions

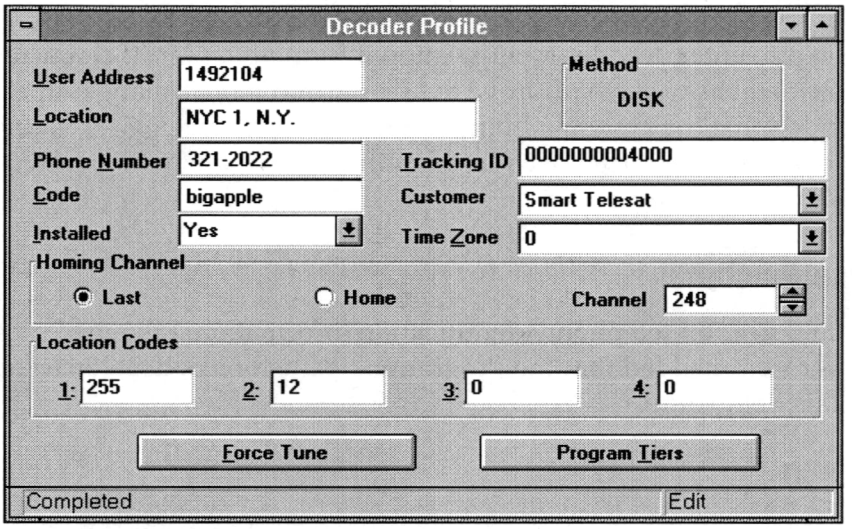
There are no actions available on the Actions menu when the Add Decoder window is displayed.

Add a Decoder

1. Select Add Decoder from the Decoder menu (or ensure that the Decoder Profile window is the active window and select Add from the Actions menu). The system displays the Add Decoder window.
3. Type in the User Address and Tracking ID, and enter the SSNs for each of the Broadcaster IDs, if applicable. This information can be obtained from Scientific-Atlanta.
4. Click **OK**. The system displays the Decoder Profile window.
5. Make any other changes to the displayed fields on the Decoder Profile window, as required. This information can be obtained from the back of the decoder chassis.
6. When all information is complete, select Update from the Actions menu.

Decoder Profile

The Decoder Profile window allows you to access and edit individual decoder records in the database. When the Decoder Summary window is displayed as the active window and you select a decoder from the list (select Edit from the Actions menu, or double-click on the decoder's row) the system displays:



Teleport/Administrator	Programmer/Customer
Privilege – Available to set for complete system Use the Customer field on the Decoder Profile window to *re-assign* a new customer number to an existing decoder record. This can only be done one decoder at a time. **Note:** If there are any odd or even tier bits set on the decoder, the tier bits should first be cleared. Once the decoder has been assigned to the new customer, new tier bits may be assigned to the decoder *provided* they conform to the overall tier bit numbers allocated for the customer's use.	*Privilege* – Recommend this feature *not* be available. Only the Teleport/Administrator has the ability to change ownership of decoders.

User Address

Each record has a User Address which corresponds to the particular decoder.

Note: An asterisk in a field indicates that the database is corrupted with an invalid decoder record.

This nine-digit number (note that leading zeros are not included) is unique to the decoder and is not editable by the user. It functions very much like a serial number and can be found on the back of the decoder chassis. The User Address number can only be changed by S-A installation personnel.

Method

This view-only field indicates the loading status of the decoder record. If a decoder was loaded into the database via a distribution disk, the field indicates **DISK**. Otherwise, if the decoder was loaded manually (i.e., by using the Add function on the Actions menu), the field indicates **KYBD**.

Location

Use this field to enter decoder identification information (ASCII characters) to help manage the database (i.e., to improve the search and global change capabilities). It is recommended that the system administrator develop a strategy for defining this field value. A well-organized decoder identification system will greatly improve observability and controllability.

Phone Number

Use this field to enter telephone identification information. Like the Location field above, it is recommended that the Programmer/Customers develop a strategy for defining this field value.

Tracking ID

Each record has a Tracking ID which corresponds to the particular decoder with the associated User Address. This 12-digit hexadecimal number is downloaded from the distribution disk when the decoder record is loaded.

The number is unique to the decoder chassis and does not change. It functions very much like an inventory serial number (tracking repair histories, security uses, etc.) and can be found on the back of the decoder chassis. Once a non-zero Tracking ID has been entered into the database, it cannot be edited.

Code

This software release allows the operator to create individual record profiles (IRPs) to define the level of service for decoders. These IRPs are loaded into the decoder database. The operator has full control over the service of each decoder, and may also divide the broadcast area (IRP:Code) into as many as 65,535 regions, so that TV reception may be blocked to all decoders in a specific region.

Use this field to enter IRP identification information for the decoder. With this field you can group decoders together by identifying each decoder in the group using the same series of ASCII characters in the Code field.

Customer

Use this field to select the Customer name you want to associate with the decoder. The Customer name is defined for each customer in the Customer window. For details, see *Chapter 10, Privilege Administration* in the topic *Customer*.

Installed ➢ YES

This field indicates if EMMs can be transmitted to the decoder. Select one of the following options from the drop down box.

State	Description
Yes	EMMs can be transmitted to the decoder.
Disabled	The decoder is not authorized to receive any service (i.e., the decoder has received 'killer' packets. Killer packets are EMMs which contain information to deauthorize the decoder). After the decoder receives the addressed killer packets, it loses its current setup information (i.e., keys and decoder profile information).
No	No EMMs are to be transmitted to the decoder based on the parameters specified in the Refresh Tasks windows. The keys and location codes previously received by the decoder remain unchanged, and the decoder remains authorized. However, if changes have been made to the key or services, the install flag has to be set to Yes to re-authorize the decoder.

Time Zone

This field is reserved for future use. When activated, this field will be used to indicate the set of time-zone teletext pages for the IRP to grab. Each decoder must be assigned to a time zone before transmission is initiated. Numbers from **0** to **7** are valid time zone entries.

Homing Channel

The homing channel is used to download the frequency plan to decoders.

Last ➢ ON

This field is used to set the decoder channel setting when powered on (i.e., reset). Click on the radio button to set the virtual channel/homing channel to the **Last** channel selected.

Home ➢ OFF

Click on the radio button to define a particular homing channel using the Channel number field.

Channel

The homing channel can be assigned a channel number in the range from **0** to **499**.

Location Codes

Location Codes 1-4

These fields determine the location code assignments for the decoder. Location codes are used to authorize (spotlight) decoders assigned to program tiers in order to receive selected events, or deauthorize (blackout) decoders assigned to program tiers that are not to receive particular events. Location codes have no effect on decoders that are not assigned to particular tiers.

The Location Code numbering scheme should be defined by the user. A five-digit decimal number in the range from **1** to **65535** can be used to specify the location code for a decoder. If the location code *associated with a specific event* in the Decoder Profile window matches the location code in the Location Codes window and the Program Tiers window, the decoder is either authorized or unauthorized to receive the event, depending on whether or not the location code is placed in the *Blackout* or *Spotlight* box in the event's Location Codes window. See *Chapter 6, Virtual Channels* for more information.

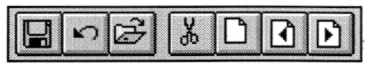
Force Tune

Click this button to display the Force Tune window to force the decoder to tune to a virtual channel. For details, see the topic *Force Tune* later in this chapter under the items, *Force the Decoder to Tune To a Virtual Channel* and *Cancel a Pending Force Tune Message*.

Program Tiers

Click this button to display the Tier Assignment Map window to define the program tiers assigned to a decoder. For details, see the topic *Tier Assignment Map*.

Decoder Profile Actions



The following actions are available when the Decoder Profile window is displayed.

Update

Select Update from the Actions menu to update the database with any changes made on this window.

Undo

Select Undo from the Actions menu to abort any changes made to the window and return to the previous values. Only usable if changes have not been saved by selecting Update.

Refresh

Select Refresh from the Actions menu to retrieve current information from the database. The Refresh function provides a method to refresh the information on screen so that you are always working with current data in the active window.

Delete

Select Delete from the Actions menu to delete a decoder from the database. For details, see the item Delete a Decoder later in this topic.

Add

Select Add from the Actions menu to add a decoder manually to the database. Manually, in this case, means entering the essential decoder information using the computer keyboard rather than the conventional method of downloading the decoder record information from a distribution diskette.

For details, see the topic *Add Decoder* earlier in this chapter.

Previous

Click the icon or select Previous from the Actions menu to move to the previous decoder in the database.

Next

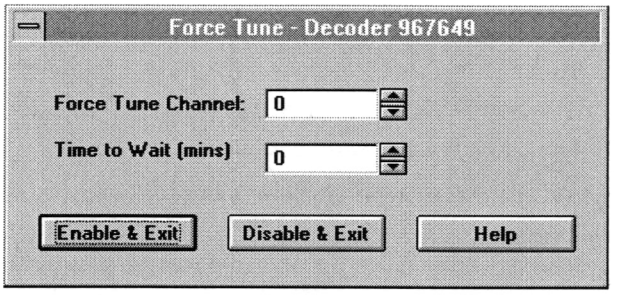
Click the icon or select Next from the Actions menu to move to the next decoder in the database.

Delete a Decoder

1. Ensure that the decoder you wish to delete appears in the Decoder Profile window.
2. Select Delete from the Actions menu. The system displays the message *Do you want to delete decoder XXXXXX?*
3. Click **OK**. The system removes the decoder from the database.

Force Tune

Use the Force Tune window to force the decoder to tune to a virtual channel. When you click the **Force Tune** button on the Decoder Profile window, the system displays:



Force Tune Channel ➤ 0

Use this field to define the virtual channel you want the decoder to tune to.

Time to Wait (mins) ➤ 0

Use this field to define the period (in minutes) that the decoder should wait before tuning to the specified virtual channel.

Force Tune Actions

There are no actions available on the Actions menu when the Force Tune window is displayed.

Force the Decoder to Tune To a Virtual Channel

1. Ensure that the decoder is displayed in the Decoder Profile window.
2. Click the **Force Tune** button. The system displays the Force Tune window.
3. Set the Force Tune Channel field to the virtual channel that you want the decoder to tune to in the range from **0** to **499**.
4. Set the Time to Wait (mins) field to the time period (in the range **1** to **65535** minutes) that you want the decoder to wait before tuning to the specified channel.

   Note: The default setting is 0, which is the off state. The Timeout field must be set to a value other than 0 (1 minute or longer) for the force tune feature to be enabled.
5. Click **Enable & Exit** to initiate the force tune feature.
6. Select Update from the Actions menu to update the decoder record.

Cancel a Pending Force Tune Message

1. Ensure that the decoder is displayed in the Decoder Profile window.
2. Click the **Force Tune** button. The system displays the Force Tune window.
3. Leave the Force Tune Channel field set to the present virtual channel number (this setting does not matter).
4. Set the Time to Wait (mins) field to **0**.
5. Click **Disable & Exit** to send the cancel force tune message to the decoder. This message overwrites any previous force tune message sent to the decoder, and the decoder remains set to the currently selected channel.
6. Select Update from the Actions menu to save the new decoder information.

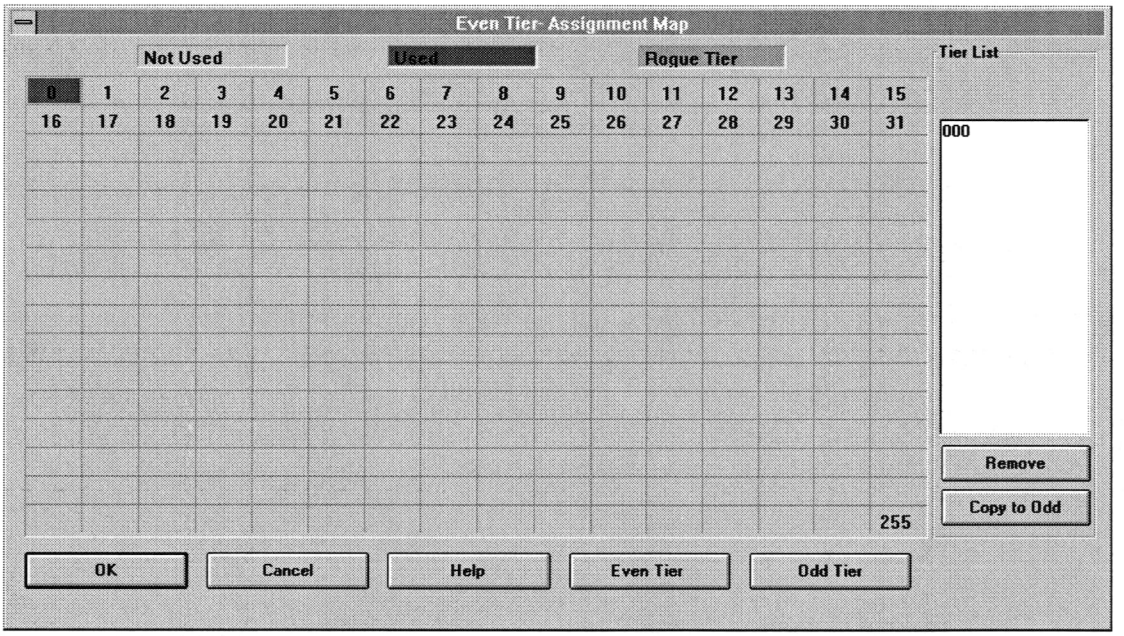
Tier Assignment Map

The Tier Assignment Map window allows you to determine what program tiers are assigned to a decoder.

Each TV program may be assigned a program tier number ranging from **0** to **255**. If the program tiers of a decoder are enabled and a program tier matches the tier assignment on the Program Tiers window of the Channel Event window, the TV program is authorized; otherwise, access to the program is denied.

For details on the virtual channel Program Tiers window and the Channel Event window, see *Chapter 6, Virtual Channels*.

When the Decoder Profile window is the active window and you select Program Tiers on the Actions menu, the system displays:



Note: This window enables you to view and edit odd and even tiers. Each time you request it, the window first displays in the Even Tier view. If you need to view and edit odd tiers, click the **Odd Tier** button. These buttons are described in greater detail later in this topic.

Tier List

This box contains all tiers assigned to the decoder by the operator. The preset value is **000**.

Remove

Click the **Remove** button to remove the selected tier number(s) in the Tier List box from the decoder record.

Copy to Odd / Copy to Even

The label on this button changes depending on what Tier Assignment Map window is displayed. Use this button to copy any tiers selected in the Tier List box to the odd or even tier window.

Even Tier

Use this button to display the Even Tier Assignment Map window when the Odd Tier Assignment Map window is the active window.

Odd Tier

Use this button to display the Odd Tier Assignment Map window when the Even Tier Assignment Map window is the active window.

How the Tier Assignment Map window works

The Tier Assignment Map window is designed to let you quickly find, assign or modify a specific odd or even tier number to a particular decoder.

Note: Only the tier numbers displayed on this window are available to you (i.e., the numbers displayed in this window are the *only* tier numbers you are able to use to assign to decoders.

Tier numbers are color coded as follows:

Color	Description
Grey	Tier is available for use **if** the grey tier cell contains a number.
Red	Tier number is in use.
Green	Rogue tier. This indicates the tier number was *removed* from its assigned use by a superuser (or service provider) but has not yet been **deselected** by the operator. Once the user clicks on a rogue tier, the tier number is de-assigned and available for future use.

Assign a Tier Number to a Decoder

To select and assign a single tier number to a decoder, simply click on the number in the Tier Map grid area. The number (and its cell) immediately turns red to indicate it is in use by the system and the tier number is also added to and displayed in the Tier List window area.

To select and assign multiple tier numbers to a decoder, click on each tier number you want to allocate to the decoder.

Alternatively, if you want to assign a block of numbers, hold down the left mouse button and drag over the block of tier numbers in the map. As you drag, the numbers within the drag box turn red. As soon as you release the left mouse button the selected tier numbers appear in the Tier List box. Once you click **OK**, the tier numbers are assigned to the decoder.

Remove a Tier Number from a Decoder

To remove a single tier number, simply click on the number in the Tier Map grid area. The number and cell immediately turn from red to gray to indicate the tier number is not in use by the system. The tier number is removed from the Tier List window area.

To remove multiple tier numbers, click on each tier number you want to remove from a decoder.

Alternatively, if you want to remove a large group of numbers quickly, highlight a tier number in the Tier List box. Hold down the **Ctrl** key and click the left mouse button for all subsequent tier numbers that you want to remove, then click **Remove**.

If you change your mind and want to deselect a tier number for removal, hold down the **Ctrl** key and click the left mouse button a second time. The highlight disappears and the tier is not removed.

If you want to remove a range of tier numbers, in the Tier List box highlight the first tier number, then use the scroll button to move to the last tier number in the range. Hold down the **Shift** key and click the left mouse button on the last tier number in the range. All tier numbers in the range are selected for removal. Click **Remove**. All tier numbers in the selected range are removed from the decoder.

Tier Assignment Map Actions

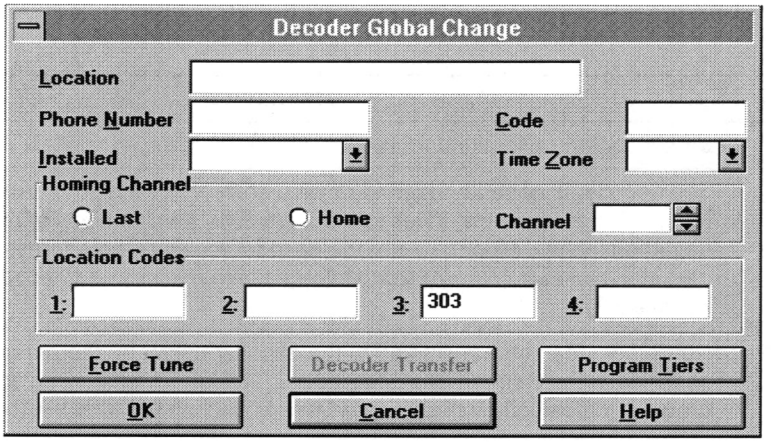
There are no actions available on the Actions menu when the Tier Assignment Map window is displayed.

Click the **OK** button when you have completed the changes to decoder tier assignments. Any changes that you make in the Tier Assignment Map window remain in effect until the next time you (or some other user) modifies the tier information for the decoder.

Decoder Global Change

The Decoder Global Change window allows you to perform global changes to the select database displayed in the Decoder Summary window.

Once you have used the search function to create your select database, when you click **Global Change** in the Decoder Summary window, the system displays a Decoder Global Change window similar to the one shown below. Note that it is very similar to the Decoder Profile window since a global edit is performed on the same data fields.



IMPORTANT NOTE

Always perform a database search to retrieve only those decoders which require changes. If you initiate a Global Change without having performed a proper search, you might overwrite the information in those decoder records found during a previous search, or even the entire database. This is most dangerous in multi-user mode. In this case, an operator at another active terminal may have modified the decoder records since you last performed a database search. Therefore, always perform a search first, then a Global Change. This ensures that your search parameters are always the most recent and that only the selected parameters are changed.

The fields in the window are identical to many of the fields in the Decoder Profile window. For additional details, see the field descriptions in the topic, *Decoder Profile*.

Location

Use this field to enter decoder location identification information (ASCII characters) that will be assigned globally to the selected decoders.

Phone Number

Use this field to enter telephone identification information that will be assigned globally to the selected decoders.

Code

Use this field to enter IRP identification information that will be assigned globally to the selected decoders. Using this field you can group decoders together by identifying each decoder in the group using the same series of ASCII characters in the Code field.

Installed

This field indicates if EMMs can be transmitted to the decoder. Select one of the following options from the drop down box and the choice will be applied globally to the selected decoders.

State	Description
Yes	EMMs can be transmitted to the decoder.
Disabled	The decoder is not authorized to receive any service (i.e., the decoder has received 'killer' packets. Killer packets are EMMs which contain information to deauthorize the decoder). After the decoder receives the addressed killer packets, it loses its current setup information (i.e., keys and decoder profile information).
No	No EMMs are to be transmitted to the decoder based on the parameters specified in the Refresh Tasks windows. The keys and location codes previously received by the decoder remain unchanged, and the decoder remains authorized. However, if changes have been made to the key or services, the install flag has to be set to Yes to re-authorize the decoder.

Time Zone

This field is reserved for future use.

Homing Channel

The homing channel is used to download the frequency plan to decoders.

Last

This field is used to set the decoder channel setting when powered on (i.e., reset). Click on the radio button to set the virtual channel/homing channel to the **Last** channel selected *for all selected decoders*.

Home

Click on the radio button to define a particular homing channel using the Channel number field *for all selected decoders*.

Channel

The homing channel *for all selected decoders* can be assigned a channel number in the range from **0** to **499**.

Location Codes

Location Codes 1-4

Use these fields to determine the location code assignments for the *selected* decoders. Location codes are used to authorize (spotlight) decoders assigned to program tiers in order to receive selected events, or deauthorize (blackout) decoders assigned to program tiers that are not to receive particular events. Location codes have no effect on decoders that are not assigned to particular tiers.

The Location Code numbering scheme should be defined by the user. A five-digit decimal number in the range from **1** to **65535** can be used to specify the location code for a decoder. If the location code *associated with a specific event* in the Decoder Profile window matches the location code in the Location Codes window and the Program Tiers window, the decoder is either authorized or unauthorized to receive the event, depending on whether or not the location code is placed in the *Blackout* or *Spotlight* box in the event's Location Codes window. See *Chapter 6, Virtual Channels* for more information.

Decoder Global Change Actions

There are no actions available on the Actions menu when the Decoder Global Change window is displayed.

Force Tune

Click this button to display the Force Tune window to globally force the IRPs to tune to a virtual channel. For details, see the topic *Force Tune* earlier in this chapter.

Decoder Transfer

This button is reserved for future use.

Program Tiers

Click this button to display the Program Tiers window to globally define the program tiers assigned to the selected decoders. For details, see the topic *Program Tiers* earlier in this chapter.

Edit Decoders Globally

1. Type in or select entries for the fields that you want to modify globally.
2. Click the **OK** button when you have modified all required fields. The system displays the message *Do you really want to save the changes?*
3. Click the **Yes** button to edit all selected decoders. It takes a few seconds for the system to update the selected records. The system then displays the message *Global set completed. View will be closed now.*
4. Click the **OK** button to complete the global edit.

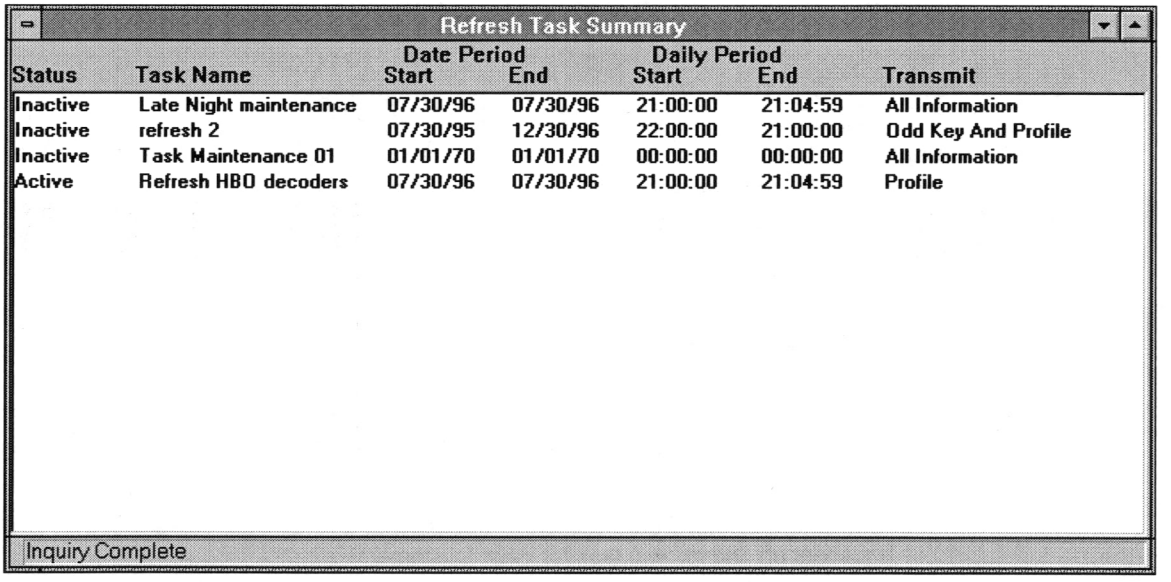
Refresh Task Summary

The Refresh Task Summary window allows you to view and select a particular task in order to customize the EMM transmission process associated with that task. Each task row contains the following information:

- current status of the task
- a unique task name (assigned on the Refresh Task window) used to identify the EMM refresh cycles for the decoder database
- a date period (range) which indicates the start and stop dates when the refresh cycle is to take place
- a time period (range) which indicates the start and stop times when the selected refresh cycle is to be active
- the type of data to be transmitted to the decoders.

For more information on network security issues and definitions of terms, see *Chapter 5, Network Security.*

When you select Refresh Task List from the Transmission menu, the system displays:



Teleport/Administrator	Programmer/Customer
Privilege – Available to set for complete system	*Privilege* – Recommend this feature *not* be available.

Refresh Task Summary Actions

The following actions are available when the Refresh Task Summary window is displayed.

Save

Function not available.

Undo

Function not available.

Refresh

Select Refresh from the Actions menu to retrieve current information from the database. The Refresh function provides a method to refresh the information on screen so that you are always working with current data in the active window.

Delete

Select Delete from the Actions menu to delete a refresh task from the database. Ensure that the task you want to delete is selected (highlighted) then select Delete. The system removes the task from the Refresh Task Summary window. For more details, see the topic *Refresh Task* later in this chapter.

Create

Select Create from the Actions menu to add a new refresh task to the database. The system displays the *Refresh Task* window. For details, see the topic *Refresh Task* later in this chapter.

Note: Customers cannot create or modify refresh tasks themselves. Therefore, the Administrator must set up one refresh task for each Customer.

Create a refresh task assigned to the new Customer and leave it in the *Inactive* state.

Copy

Select Copy from the Actions menu to add a new refresh task to the database which is *copied from an existing task*. The system displays the copied task in the Refresh Task Summary window with the same parameters as the original task and names the new task COPY_TASK. For more details, see the topic *Refresh Task* later in this chapter.

Print Refresh Task Summary

Function not currently active.

Display Refresh Task

Select a task from the list then click this icon or select Display Refresh Task from the Actions menu to display the Refresh Task window. Use the Refresh Task window to customize the EMM transmission process for the selected task. For details, see the following topics, *Refresh Task* and *Selection Criteria*.

Display Refresh Task Monitor

Once the refresh update cycle has begun, click this icon or select Display Refresh Task Monitor from the Actions menu to view the status of the EMM transmission. For details, see the topic *Refresh Task Monitor*.

This function is available only if the task is active.

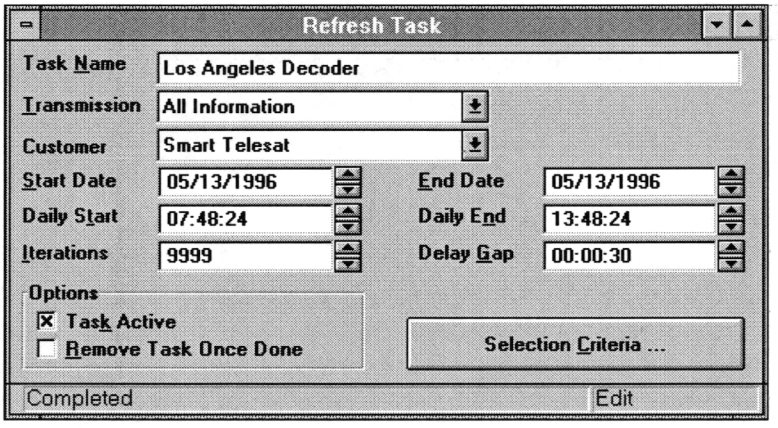
Refresh Task

The Refresh Task window allows you to customize the EMM transmission process. The operator has absolute control over the modes of EMM transmission. EMMs may be transmitted to a single record, the entire database, or a select database. The number of decoders chosen is based on your search criteria. You can also control the type and amount of data to be transmitted (e.g., you may want to update only the Even Key, instead of both Keys and the full Profile).

EMM transmission can be controlled manually by the operator, or set to activate at a given time. To add further flexibility, EMM transmission bursts can be separated by a specific amount of time known as the Delay Gap (e.g., one minute between cycles). The Delay Gap cannot be set to less than 30 seconds between iterations (transmission bursts).

During EMM transmission, any record which was modified by the user receives top priority in the transmission sequence and is sent out immediately. Regular transmission resumes only after the decoder has been updated. If no EMMs are being transmitted (i.e., if the Iterations field is set to **1** or more), any edits made to a decoder record are saved, but not transmitted. The recently modified decoder is updated (if part of the select database) only when EMM transmission is re-activated in the normal sequence (i.e., when the Iterations field is set to **0** (continuous transmission) or you select Update from the Actions menu).

When you select a task on the Refresh Task Summary window and select Display Refresh Task from the Actions menu, the system displays:



Teleport/Administrator	Programmer/Customer
Privilege – Available to set for complete system	*Privilege* – Recommend this feature *not* be available. Customers cannot create or modify refresh tasks themselves, so the Administrator must set up one refresh task for each Customer, and leave it in the *Inactive* state.

Task Name

This is an editable field *only* if you created a new task by selecting New or Copy from the Actions menu when the Refresh Task Summary window was displayed.

Under user control, the system is capable of multiple refreshes to the decoder database. You can set any number of refresh cycles to take place simultaneously to any number of select decoder databases. For each refresh task, you must specify a unique Task Name and initiate a separate search using a different set of search criteria.

Note: Although the system allows many refreshes to take place at the same time, each with a different Task Name, no more than three should be selected if reasonable system performance is to be maintained at any given time.

Transmission

Use this field to select the data type to be transmitted to the selected decoders.

Type	Description
All Information	Transmits both the Even and Odd keys and the profile to the selected decoders.
Odd Key	Transmits the Odd key to the selected decoders.
Even Key	Transmits the Even key to the selected decoders.
Profile	Transmits the Profile to the selected decoders. The profile consists of video, audio, data, teletext and control information.
Odd Key and Profile	Transmits the Odd key and Profile to the selected decoders.
Even Key and Profile	Transmits the Even key and Profile to the selected decoders.
Keys and Profile	Transmits both the Even and Odd keys and the profile to the selected decoders.

Customer

This field indicates the Customer name associated with the refresh task. The Customer Name can be changed as required. For details, see *Chapter 10, Privilege Administration* in the topic *Customer*.

Start Date / End Date

Use these fields to define the start and stop dates for the time period when the refresh cycle is to take place. The format is "mm-dd-yyyy". Note that the End Date must not be set earlier than the Start Date, otherwise an error message is displayed.

Note: Ensure that your Windows settings are in agreement with the **mm-dd-yyyy** format. Otherwise, unpredictable results may occur. To verify or change your date settings, open the Windows Control Panel, double click on the International icon, and confirm or change your date setting in the Date Format area of the International window.

Daily Start / Daily End

Use these fields to specify the start and stop times when the selected refresh cycle is to be active. The data format is "hh:mm:ss" based on a 24-hour clock. Note that the End Time must not be set earlier than the Start Time, otherwise an error message is displayed.

Note: The time displayed is the server time, *not* local PC time. Verify that the server time is correct before performing any refresh task activities. This note also applies to any event queue or virtual channel programming you may perform.

Iterations ➢ 0

Use this field to specify the number of times the selected refresh cycle is to take place within the date and time parameters specified. Enter any decimal number from **0** to **9999**. A setting of zero **0** ensures that the refresh cycle is continuous/non-stop.

Delay Gap

Use this field to specify a time delay (in seconds) between iterations (repetitions) of the refresh cycle. This is useful when a number of refresh tasks have been set to active, since it frees up some system resources during the delay period. This time period may be any number in the range from **00:30:00** to **23:59:59** in seconds.

Options

Task Active ➢ OFF

Use this option to define the status (**On** or **Off**) of the refresh task. If the check box is set to **On**, the refresh occurs at the specified date and time. If it is set to **Off**, the refresh cycle will not be initiated, regardless of the date and time settings.

Remove Task Once Done ➢ OFF

Use this option to delete the current refresh Task after its completion, if required. For example, when the criteria used for the refresh cycle is used only once (as in a special event), this check box should be set to **On**. Similarly, when a broadcast is repeated frequently or occasionally, this check box should be set to **Off**.

Selection Criteria...

Click this button to display the Selection Criteria window and create a subset of select decoders for EMM transmission (decoder refresh) based on your search criteria. For details, see the topic Selection Criteria.

Refresh Task Actions

The following actions are available when the Refresh Task window is displayed.

Update

Select Update from the Actions menu to update the database with any changes made on this window.

Undo

Select Undo from the Actions menu to abort any changes made to the window and return to the previous values. The system displays the message *Do you want to reload the task?* Only usable if changes have not been saved by selecting Update.

Refresh

Select Refresh from the Actions menu to retrieve current information from the database. The Refresh function provides a method to refresh the information on screen so that you are always working with current data in the active window.

Delete

Select Delete from the Actions menu to delete a refresh task from the database. For details, see *Delete Refresh Task* later in this topic.

Create

Select Create from the Actions menu to add a new refresh task to the database. For details, see *Add Refresh Task* later in this topic.

Copy

Select Copy from the Actions menu to add a new refresh task to the database *copied from an existing task.* For details, see *Copy Refresh Task* later in this topic.

Previous

Click the icon or select Previous from the Actions menu to move to the previous task in the database. The system displays a message if you have reached the last task.

Next

Click the icon or select Next from the Actions menu to move to the next task in the database. The system displays a message if you have reached the first task.

Display Refresh Task Monitor

Once the refresh update cycle has begun, click this icon or select Display Refresh Task Monitor from the Actions menu to view the status of the EMM transmission. For details, see the topic *Refresh Task Monitor*.

This function is available only if the task is active.

Add Refresh Task

When you select Create from the Actions menu, the system presents a new Refresh Task window that contains just basic or default settings. If you wish to save time and preserve settings from an existing refresh task, use the Copy function instead.

1. Ensure the Refresh Task window is the active window.
2. Select Create from the Actions menu. The system displays the message *Do you want to add a new task?*
3. Click **Yes**. The system displays a Refresh Task window with the Task Name *NEW_TASK*.
4. Type in the name of the new task and any other appropriate settings (including your selection criteria), then select Update from the Actions menu. The system displays the message *Do you want to save task (name_of_task)?*
5. Click **Yes**. The system updates the database and places the new task in the displayed list on the Refresh Task Summary window.

Copy Refresh Task

1. Ensure the Refresh Task window is the active window and the task that you wish to copy is displayed in the window.
2. Select Copy from the Actions menu. The system displays the message *Do you want to copy current task to new task?*
3. Click **Yes**. The system displays a Refresh Task window with the Task Name *COPY_TASK*.
4. Type in the name of the new task and any other appropriate settings (including your selection criteria) then select Update from the Actions menu. The system displays the message *Do you want to save task (name_of_task)?*
5. Click **Yes**. The system updates the database and places the new task in the displayed list in the Refresh Task Summary window.

Delete Refresh Task

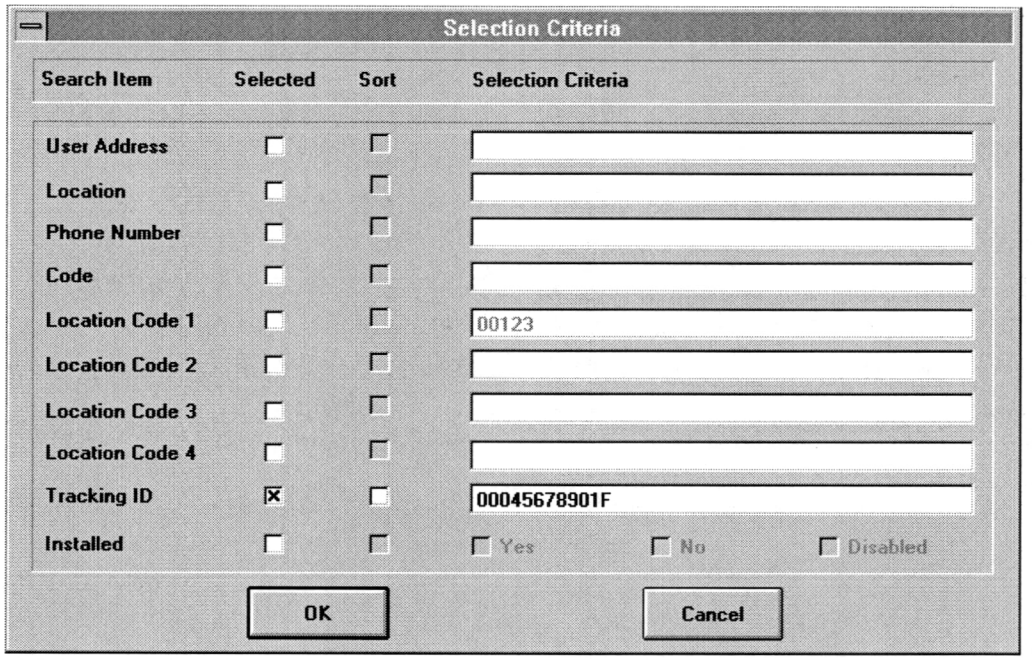
1. Ensure the Refresh Task window is the active window and the task that you wish to delete is displayed in the window.
2. Select Delete from the Actions menu. The system displays the message *Do you want to delete task (name_of_task)?*
3. Click **Yes**. The system removes the task from the database.
4. Select Refresh from the Actions menu to verify the task has been deleted.

Selection Criteria

The Selection Criteria window is used to search the decoder database for decoders which match specific search criteria. A successful search creates a select database which is used to update the EMMs for those decoders in the select database.

Note that this window is very similar to the Decoder Database Summary window. For more information on searches and selection criteria, see the topic, *Decoder Database Summary*, and refer to the application note (*Application Note E – Database Search and Global Change Features*) in the *Appendices* for examples of simple and complex search possibilities.

When you click the **Selection Criteria...** button on the Refresh Task window, the system displays:



Search

The fields listed below the **Search** heading correspond to most of the fields on the Decoder Profile window. Setting the check boxes **ON** or **OFF** for the associated field and defining the optional search criteria determines what records will be chosen for the select database.

For more information on definitions for these fields and search examples, see the topics, *Decoder Profile* and *Decoder Database Summary*.

Select

Click the check box to **ON** to include the corresponding field (and any selection criteria defined for the field) as a search item. If the check box is set to **OFF**, the system ignores any parameters that might be specified for the field.

Sort

Click the check box to **ON** to sort the search results. Depending on the search field type, the system places the results in alphabetical order (A to Z, or a to z) or numerical order (0 to 9) in the select database. If the check box is set to **OFF**, the system does not sort the field results.

Note: If User Address is chosen as a select field and no other field is defined as a sort field, the system automatically defaults to a sort on the User Address.

If you define two or more fields as sort fields, the system sorts according to the hierarchy shown on screen. For example, if you define Code, Location Code 1 and Location Code 2 as sort fields, the system first sorts all records by Code, then sorts all Location Code 1 records within the Code sort, then finally sorts all Location Code 2 records.

Selection Criteria

This field allows you to define the values for the specific search criteria for each of the different search items. It can be used to specify an exact value, a range of values or a combination of both.

Note: The Installed row only offers you the choices defined by the radio buttons:

Yes	=	select all installed decoders
No	=	select only decoders *not* installed
Disable	=	select only disabled decoders.

For information on using delimiting characters to refine your selection criteria, see the topic *Decoder Database Summary* earlier in this chapter.

Example 1

If you want to search for **only** decoder records 100010 and 200202:

Enter **100010, 200202** in the Selection Criteria field of the User Address row.

Example 2

If you want to search for **all** decoder records between 100010 and 200000:

Enter **100010 - 200000** in the Selection Criteria field of the User Address row.

Example 3

If you want to search for the individual decoder record 100010 **in addition to** those between 200000 and 300000:

Enter **100010, 200000 - 300000** in the Selection Criteria field of the User Address row.

When performing a *character* search in the Location or Code field, the wildcard character "*" (asterisk) may be used to improve search flexibility.

Note: The Location and Code fields are case sensitive and do **not** accept the hyphen or comma delimiters.

Example 4

If you want to search for **all** disabled decoders at **all** locations:

Enter * in the Selection Criteria field of the Location row and click the **Disable** radio button in the Installed row.

Example 5

If you want to search for **all** decoders at all locations starting with **103**:

Enter 103* in the Selection Criteria field of the Location row and click the **Installed** check box to **OFF**.

The order in which records are retrieved may be changed by searching for a range of decoder records first, followed by a search for a specific record.

Example 6

If you want to search for the **first** 500 decoders at **all** locations:

Enter **0 - 500** in the Selection Criteria field of the User Address row.

Then search for **all** decoders within that selected range at **all** locations which are identified by the user-defined code "R&D".

Enter * in the Selection Criteria field of the Location row and **R&D** in the Selection Criteria field of the Code row.

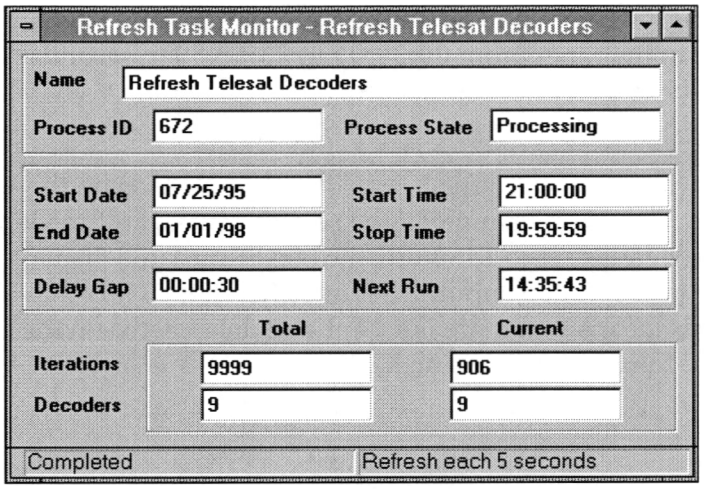
Search flexibility is further enhanced when more than one Search Item is used with its own set of Selection Criteria. Refer to the application note (*Application Note E – Database Search and Global Change Features*) in the *Appendices* for other examples of simple and complex search possibilities.

Selection Criteria Actions

There are no actions available on the Actions menu when the Selection Criteria window is displayed.

Refresh Task Monitor

The Refresh Task Monitor window allows you to view the status of the EMM transmission. When you select a task on the Refresh Task Summary window and once the refresh cycle has been initiated, the refresh task progress can be monitored by selecting Display Refresh Task Monitor from the Actions menu. If you select this feature, the system displays:



Name

This field indicates the Task Name defined in the Refresh Task window. It indicates the name of the refresh task currently active.

Process ID

This field indicates the CPU processing state for the refresh task. Zero (0) means the CPU is inactive.

Process State

This field indicates if the refresh task process is either **Idle**, **Processing** or **Restarting**.

State	Description
Idle	The CPU is not presently processing information (e.g., action is not required by CPU or refresh task has finished).
Processing	Action is required by the CPU during the refresh cycle.
Restarting	The refresh task has started again due to a system "halt" (e.g., due to an "PCC-3000 system restart").

Start Date / End Date

These fields indicate the start and stop dates for the period when the refresh cycle is to take place. The format is "mm-dd-yy".

Start Time / Stop Time

These fields indicate the start and stop times when the selected refresh cycle is to be active. The data format is "hh:mm:ss" based on a 24-hour clock.

Delay Gap

This field indicates the time delay (in seconds) between iterations (repetitions) of the refresh cycle. This is useful when a number of refresh tasks have been set to active, since it frees up some system resources during the delay period. This time period may be any number in the range from **00:30:00** to **23:59:59** in seconds.

Next Run

This field indicates when the next refresh cycle is to begin based on the settings in Start Time and Delay Gap. For example, if the refresh cycle start time is set to 10:00:00 and the delay gap is set to 1 minute, the Next Run Time displays 10:01:00. If the refresh cycle starts at 10:01:00 and finishes at 10:02:00, the Next Run Time would display 10:03:00. This means that there is a 1-minute delay between the end of the last refresh cycle and the beginning of the next.

Iterations

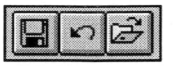
The Total field indicates the number of refresh cycles you selected. The Current field indicates the Broadcaster ID number of refresh cycles completed. This version of the PCC-3000 system only displays zero (0) in this field (because only Broadcaster ID 0 is currently used).

Decoders

The Total field indicates the number of decoders being addressed in the select database. The Current field indicates the number of decoders addressed within the active refresh cycle.

If the Iterations and Decoder counts in the Current field do not increment within the time period specified in the Monitor Interval, and the Status field indicates that the task is Active, there may be a problem with the encoder or cabling between the PCC-3000 system and encoder.

Refresh Task Monitor Actions

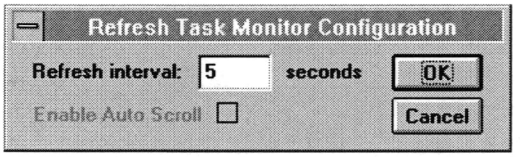


In addition to the standard Update, Undo and Refresh actions, the following action is available when the Refresh Task Monitor window is displayed.

Configure

To modify the refresh interval on the Refresh Task Monitor window:

1. Select Configure from the Actions menu. The system displays:



2. Type in the new value for the refresh rate interval, if required. This can be changed to any value between **1** and **60** seconds by highlighting the current value and typing in a new value. The default setting is **5** seconds.

   The Refresh Interval determines the refresh rate at which refresh task messages are displayed on the Refresh Task Monitor window. If you change the interval (e.g., from 5 to 20 seconds), the next time you access the Refresh Task Monitor window the new refresh rate remains in effect.

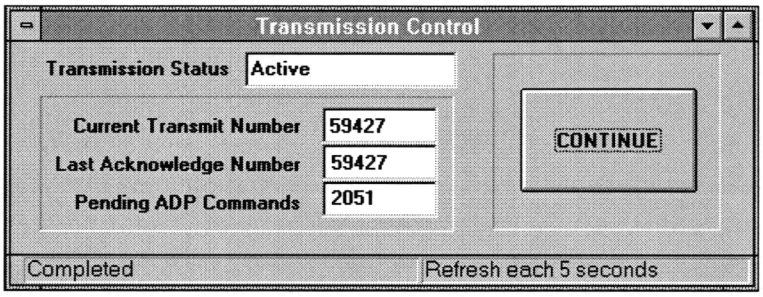
3. Click **OK** to set the new configuration values.

Transmission Control

The Transmission Control window is used to control the transmission of Entitlement Management Messages (EMMs) which includes Addressed Data Packets (ADPs) to the decoder population.

Note: This window enables you to control the entire system (i.e., from here you can *stop* all active refresh tasks). To start (or restart) the transmission of EMMs, access the Refresh Task window and initiate the transmission from there. For details, see *Chapter 8, Decoder Database Control* in the topic *Refresh Task*.

When you select Transmission Monitor from the Transmission menu, the system displays:



Teleport/Administrator	Programmer/Customer
Privilege – Available as setting applicable to complete system	*Privilege* – Recommend this feature not be made available to customers.

Transmission Status

This field indicates the current status of ADP transmissions to the decoder population after each screen refresh. The status can be one of the following:

Status	Description
Active	Indicates the transmission state is in refresh mode and a refresh task is active.
Idle	Indicates no refresh tasks are active and underway.
Suspended	Indicates the operator has stopped transmission of refresh tasks.

Current Transmit Number

This field indicates the last ADP sequence number transmitted to the multiplexer. This number may be in the range from **0** to **65535**.

Last Acknowledge Number

This field indicates the last ADP sequence number transmitted to the multiplexer, as polled by the PCC-3000 system. This number should be close to (or identical to) the Current Transmit Number under normal operating conditions. If it is consistently lower than the Current Transmit Number, an alarm message should be displayed indicating a problem with one of the multiplexers.

Pending ADP Commands

This field displays a number which represents the ADP loading on the ADP resource management program. This program begins throttling requests at 3,000 pending commands which represents full loading. The loading factor is calculated as follows:

Loading Factor = # of pending ADP commands / 3,000 x 100

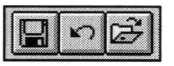
Continue / Stop

This button changes depending on the transmission state of the system defined by the operator.

Under normal conditions, the button is labelled **Continue**. To stop transmission of refresh tasks *throughout the system,* click the **Continue** button, then select Update on the Actions menu. The button label changes to **Stop**.

To restart transmission of refresh tasks *throughout the system,* click the **Stop** button, then select Update on the Actions menu. The button label changes to **Continue**.

Transmission Control Actions

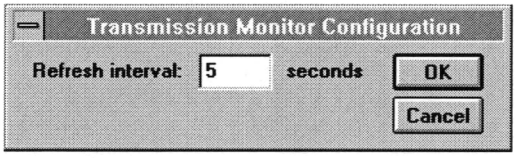


In addition to the standard Update, Undo and Refresh actions, the following action is available when the Transmission Control window is displayed.

Configure

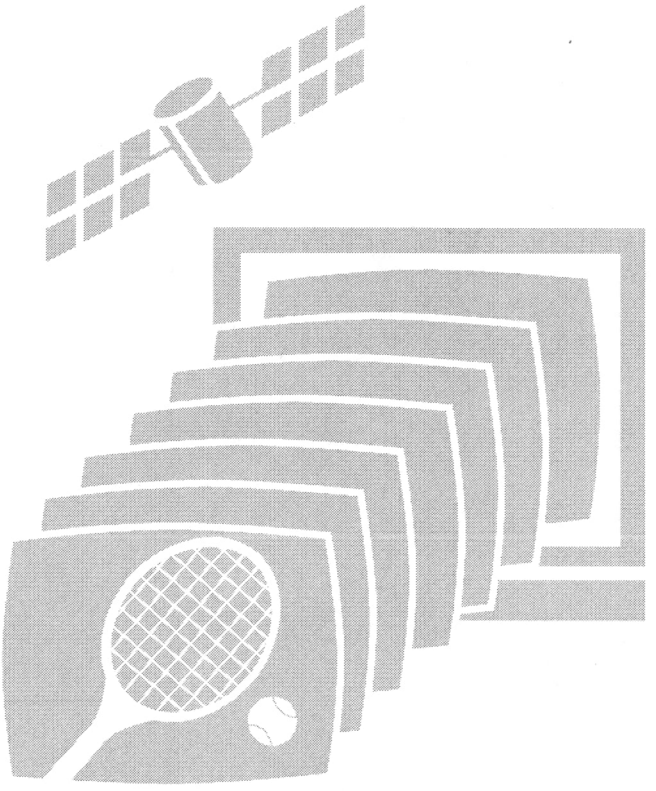
To change the refresh interval for refresh tasks:

1. Select Configure from the Actions menu. The system displays:



2. Type in the new refresh interval value and click **OK**. The new refresh interval is immediately displayed in the status bar of the Transmission Control window.

Chapter 9 OS DOWNLOAD



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Introduction

The *OS Download* feature allows the uplink operator to update decoders with new versions of the Display Control Processor (DCP) software and the Compression Control Processor (CCP) software. This is necessary to ensure that all decoders operate according to the same system parameters.

Downloading decoder software upgrades can be performed using two methods: forced or unforced. Both methods cause an interruption in service, so this operation should be scheduled at a time when a temporary interruption in service will have the least impact on the viewer.

Forced download

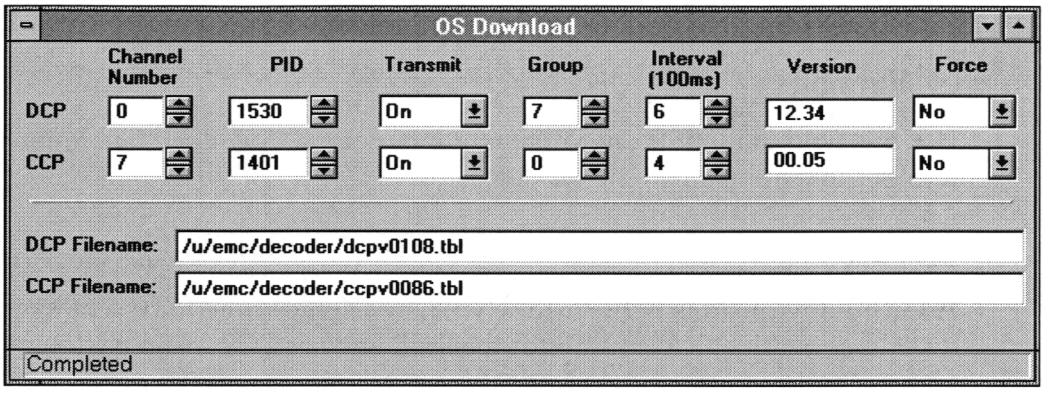
A forced download operation is normally used when a small group of decoders require updating (i.e., the number of decoders is small in comparison to the total number in the network). The time required to download the OS files to a selected group is dependent upon the number of decoders in the group.

Unforced download

An unforced download operation is normally performed during installation when the OS files need to be downloaded to all decoders in the network. In this case, decoders can only receive downloaded files when they are set to Standby mode (press **Standby** button on front panel of decoder). This means interruption of the programs being broadcast from the decoders.

OS Download

The OS Download window allows you to update the decoder records using a forced or unforced download. It is recommended that you undertake an OS download only with the assistance of Scientific-Atlanta customer support personnel. When you select Decoder OS Download from the Decoder menu, the system displays:



Channel Number

Use this field to enter the channel number for the download. The OS will only be received by decoders tuned to the specific channel. If this field is set to zero, then all channels will receive the OS.

PID

Use this field to enter an unused PID in the range from **32** to **8190** for each download file. Check the *PID Summary* window to verify that the selected PID is not assigned to any other service. If you try to assign a PID that is already in use, it will not be accepted by the system. For more information, see *PID* in the *Glossary*.

Transmit

Use this field to determine if the download files are to be transmitted to decoders. This field functions like an on/off switch. Set this field to **ON** and the Force field to **OFF**. The decoders selected to receive the download files must be in Standby mode to receive the updated files.

Group

Use Group **000** to download the DCP and/or CCP operating file(s) to all decoders. Specific groups of decoders can be selected in the range from **004** to **999** in order to update or install the new operating system files.

The Group number for decoder groups must be entered via the decoder's installer menu before any transmission occurs.

Interval

Use this field to determine the delay time interval between the sections of the OS files sent to the decoders. The Interval can be set to a number in the range from **4** to **999** hundredths of a millisecond. This setting directly affects system resources. Setting this value to a small number speeds up the download but slows down the system. It is recommended that a large interval setting (**500** 100/ms or greater) be entered in this field.

Version

Use this field to identify the version number of the download file. Enter the version number that appears on the diskette.

Force

A forced download is performed when new OS files need to be sent to a group of decoders. Set this field to **YES** for the DCP and/or CCP file to be downloaded. *See How to Perform a Forced Download* for instructions.

DCP & CCP Filename

Use these fields to enter the full path and filename of the download files on the computer. You can change the path and filename by re-entering it on the screen. File names and paths are provided by S-A installation personnel at the time of system installation.

Note: If your system directories are on a UNIX system, directory slashes are *right slashes* (/). If your system directories are on a DOS-based system, directory slashes are *back slashes* (\).

How to Perform a Forced Download

1. Enter the file names of the DCP and CCP files that appear on the diskette, or enter the new file names if you have changed them since loading them onto the system.
2. Select an unused PID in the range from **32** to **8190**. Check the *PID Summary* window (accessed on the Uplink menu) to ensure that the PID is not assigned to any other service in the system.
3. Set the Transmit field to **On**.
4. Enter the group number (in the range from **004** to **999**) for the decoders that you want to update.
5. Set the Interval field to a large enough number that system resources are not affected by the download operation. This number directly affects the rate at which the download occurs. See details in Interval field description.
6. Enter the version number of the OS files to be downloaded.
7. Set the Force field to **YES**.

8. Select Update from the Actions menu to initiate the download operation. Decoders will experience a momentary interruption in service as they receive the new OS files.

How to Perform an Unforced Download

1. Enter the file names of the DCP and CCP files that appear on the diskette, or enter the new file names if you have changed them since loading them onto the system.
2. Select an unused PID in the range from **32** to **8190**. Check the *PID Summary* window (accessed on the Uplink menu) to ensure that the PID is not used elsewhere in the system.
3. Set the Transmit field to **ON**.
4. Type in **000** in the Group field to download OS files to all decoders in the network, or type in a specific Group number.
5. Set the Interval field to a large enough number that system resources are not affected by the download operation. This number directly affects the rate at which the download occurs. See details in Interval field description.
6. Enter the version number of the OS files to be downloaded.
7. Set the Force field to **NO**.
8. Select a channel number for the download.
9. Press the **Standby** button on the decoder front panel to place all decoders in the Standby mode. Decoders must be set to Standby to receive the new OS files. Select channel **0** on the decoders if they are set to another channel (i.e., non-zero).

   Note: Selecting channel zero on the download screen forces the computer to use more resources and bandwidth. It may also cause accidental downloading to decoders that do not need to accept the download.

10. Select Update from the Actions menu to initiate the download operation, and click **Yes** when the system displays the message *Do you want to continue?*

    The download process causes an interruption in service until the decoder returns to the normal viewing channel.

OS Download Actions

The following actions are available when the OS Download window is displayed.

Update

Select Update from the Actions menu to update the database with any changes made in this window.

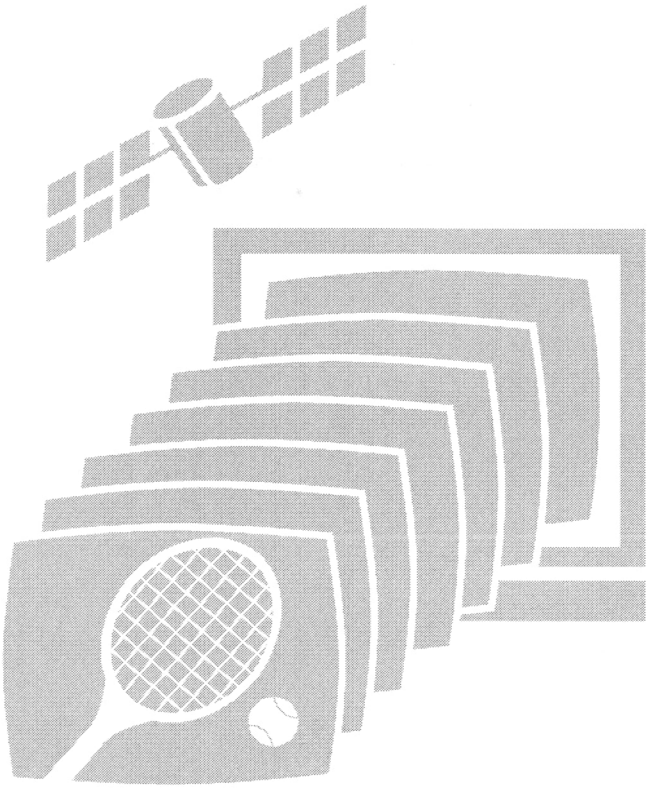
Undo

Select Undo from the Actions menu to abort any changes made to the window and return to the previous values. Only usable if changes have not been saved by selecting Update.

Refresh

Select Refresh from the Actions menu to retrieve current information from the database. The Refresh function provides a method to refresh the information on screen so that you are always working with current data in the active window.

Chapter 10 PRIVILEGE ADMINISTRATION



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Introduction

The Privilege Administration windows are used to set the level of window access and system control for users and privilege groups and to allow users to change their passwords.

User

The User category defines the name, password, privilege group and other details of *each* user authorized to operate the system.

Privilege Groups

The Privilege Groups window is used to define the group labels and privilege details of the various groups authorized to use the PowerVu system.

Customer Groups

The Customer window is used to define the names and details of the various customers who use the PowerVu system.

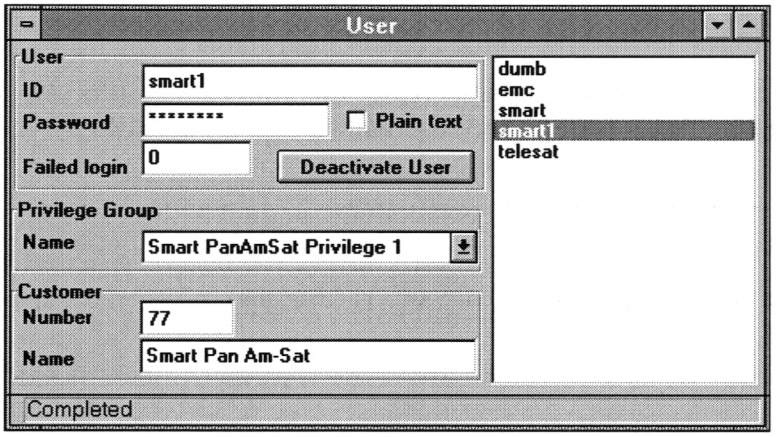
Note: The PCC-3000 version of the software supports **multiple** customers assigned by the master user. This includes the default customer (or the original customer) assigned during system setup by S-A installation personnel.

User

The User window allows you to access and modify the users assigned to a particular privilege group. You can perform the following functions from this window:

- Display a summary of the system's users
- Assign (or reassign) a user to a particular group
- View a user's password (if you have the required privilege)
- Reset the user's login privileges (necessary after three (3) failed login attempts)
- Change your password
- Add or delete a user.

When you select User Assignment from the Administration menu, the system displays:



Teleport/Administrator	Programmer/Customer
Privilege – Able to set for the complete system.	*Privilege* – depends on the User level granted by the Administrator.

User

ID

This field indicates the User ID by which the user is identified in the system.

Note: Users cannot change their own User IDs. User IDs can only be input by someone with the required privilege.

Password

Use this field to type in a password associated with the User ID.

Note: Users can change their own passwords. For details, see the topic *User Change Password* later in this chapter.

Plain Text ➢ OFF

This field indicates if the user's password is displayed in plain text or asterisks representing each character. Set this field to **ON** to view a user's password.

Failed Login

This field indicates the number of failed login attempts made by the user during all login attempts. The default value for failed login attempts is three. Each time the user successfully logs in, the system resets this field to zero. Otherwise, the failed login counter increments by one until the failed login value is reached and the user is *locked out of the system*. Only a user with the proper privileges can reactivate a user on the system after the failed login value is reached.

Reactivate User/Deactivate User

This button changes depending on the Failed Login status of the user.

If the value of the Failed Login field is greater than three, the button label displays: **Reactivate User**. Click this button to reactivate a user on the system who has reached the maximum number of failed login attempts.

If the value of the Failed Login field is less than or equal to three, the button label displays: **Deactivate User**. Click this button to remove a user's login privileges.

Note: As soon as you click the button and deactivate the user, the button label changes to **Reactivate User**.

Select Update from the Actions menu each time you reactivate or deactivate a user.

Privilege Group

Name

Use this field to select the privilege group the user belongs to.

Customer

Number

This field indicates the Customer ID that the privilege group belongs to. This number is generated by the system and cannot be changed.

Name

This field indicates the customer's name that the privilege group belongs to.

Create new user

A user can only be created/added after:

- the corresponding customer record has been set up
- a privilege group has been set up for the customer.

When adding a user, be sure that you use the appropriate privilege group. Otherwise, the user will be set up for the wrong customer.

1. Select User Assignment from the Administration menu. The system displays the User window.
2. Click the **Create** button.
3. Select the group from the *Privilege Group* Name selection box that you want the user to be assigned to.
4. Type in the user's ID in the *User* ID field.
5. Click the Update icon to save the new user ID information to the database.

User Actions

The following actions are available when the User window is displayed.

Update

Select Update from the Actions menu to update the database with any changes made in this window.

Undo

Select Undo from the Actions menu to abort any changes made to the window and return to the previous values. Only usable if changes have not been saved by selecting Update.

Refresh

Select Refresh from the Actions menu to retrieve current information from the database. The Refresh function provides a method to refresh the information on screen so that you are always working with current data in the active window.

Create

Select Create from the Actions menu to add a new user to the database. For details, see the item *Create new user*.

Delete

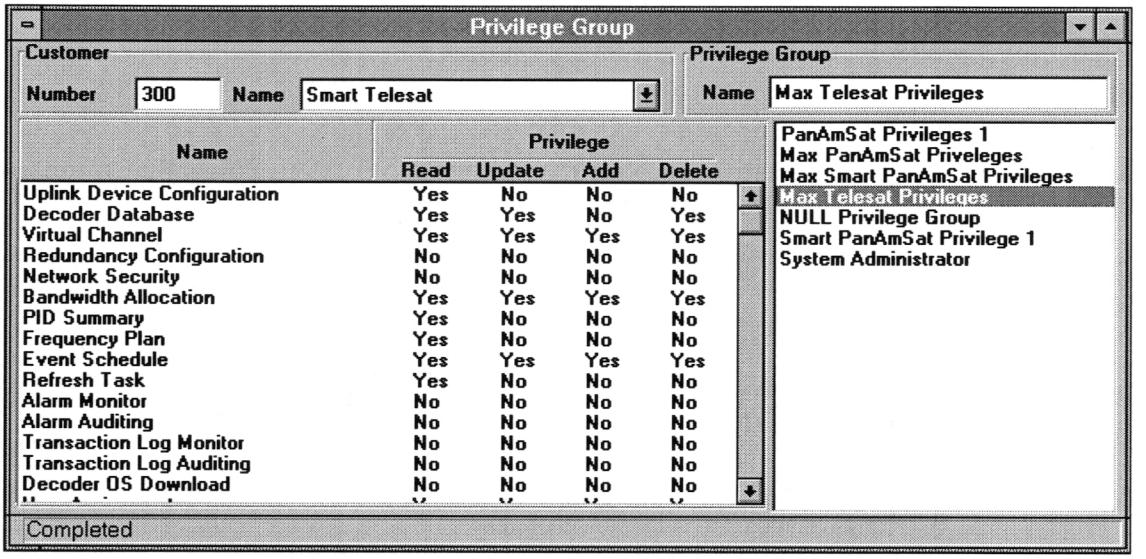
Select Delete from the Actions menu to remove a user from the database. Ensure that the user is highlighted in the user group list, then select or click the **Delete** icon.

Privilege Group

The Privilege Group window allows you to access and modify the privilege groups and their associated privileges. You can perform the following functions from this window:

- Display a summary of the system's privilege groups
- Edit the privileges associated with the group
- Add or delete a group and its associated privileges.

When you select Privilege Assignment from the Administration menu, the system displays:


Privilege Group
Customer
Number 300
Name Smart Telesat
Privilege Group
Name Max Telesat Privileges
Name
Privilege
Read Update Add Delete
Uplink Device Configuration Yes No No No
Decoder Database Yes Yes No Yes
Virtual Channel Yes Yes Yes Yes
Redundancy Configuration No No No No
Network Security No No No No
Bandwidth Allocation Yes Yes Yes Yes
PID Summary Yes No No No
Frequency Plan Yes No No No
Event Schedule Yes Yes Yes Yes
Refresh Task Yes No No No
Alarm Monitor No No No No
Alarm Auditing No No No No
Transaction Log Monitor No No No No
Transaction Log Auditing No No No No
Decoder OS Download No No No No
PanAmSat Privileges 1
Max PanAmSat Priveleges
Max Smart PanAmSat Privileges
Max Telesat Privileges
NULL Privilege Group
Smart PanAmSat Privilege 1
System Administrator
Completed

Teleport/Administrator	Programmer/Customer
Ensure that all privileges in the System Administrator privilege group are set to **Yes**. This ensures that the Administrator's actions are *not* restricted so that, for example, all encoders and decoders can be assigned to different customers, as required.	For guidelines on how to set up Privilege Groups for Programmer/Customers, please refer to *Application Note C – PCC-3000 Configuration Notes* and *Application Note D – PCC-3000 Customer Privileges*.

Customer

Number

This field indicates the Customer ID used to identify the customer. This number is generated by the system and cannot be changed.

Name

Use this field to define (or edit) the name of the customer for whom the privilege groups are to be assigned.

Privilege Group

Name

Use this field to define (or edit) the name of the privilege group. If you select a privilege group for editing from the group name list box below, it appears in this field. Any changes that you make to the fields in this window will affect the group name displayed here.

Name

The rows beneath this column heading identify each PowerVu Command Centre window for which privileges are available.

Privilege

Each field beneath this column heading identifies if the privilege is available (**Yes**) or unavailable (**No**) to the selected privilege group.

Note: The Read, Update, Add and Delete settings may not always be available for changing (i.e., toggling between **Yes** and **No**). The ability to change a setting depends on the **master** privilege group setting defined for the customer.

For example, if the master group setting for the Add privilege is set to **No**, then you will *not* be able to change the setting to Yes. Only those with a master (or super user) privilege may change the master privilege group's settings.

Read

Use this field to determine if the privilege group is able to view (**Yes**) the particular window. If this field is set to **No**, the window is not displayed to the users in the privilege group.

Double click on this field to toggle between **Yes** and **No**.

Update

Use this field to determine if the privilege group is able to update (**Yes**) the data in the window. If this field is set to **No**, the window is displayed but the users in the privilege group cannot update any information.

Double click on this field to toggle between **Yes** and **No**.

Add

Use this field to determine if the privilege group is able to add (**Yes**) data in the window. If this field is set to **No**, the window is displayed but the users in the privilege group can only update (but not add) information.

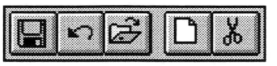
Double click on this field to toggle between **Yes** and **No**.

Delete

Use this field to determine if the privilege group is able to delete (**Yes**) data in the window. If this field is set to **No**, the window is displayed but the users in the privilege group cannot delete information.

Double click on this field to toggle between **Yes** and **No**.

Privilege Group Actions



In addition to the standard Update, Undo and Refresh actions, the following actions are available when the Privilege Group window is displayed.

Create

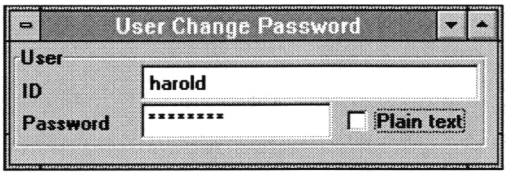
Select Create from the Actions menu to add a new privilege group to the database. Type in the name of the new privilege group, modify the privileges if required, then click the Update button.

Delete

Select Delete from the Actions menu to remove a privilege group from the database. Ensure that the privilege group is highlighted in the privilege group list, then select or click **Delete**.

User Change Password

The User Change Password window allows each user to modify his or her own password. When you select Change Password from the Administration menu, the system displays:



ID

This field indicates the User ID by which the user is identified in the system.

Note: Users cannot change their own User IDs. User IDs can only be input by someone with the required privilege.

Password

Use this field to type in a new password associated with your User ID.

Plain Text ➤ OFF

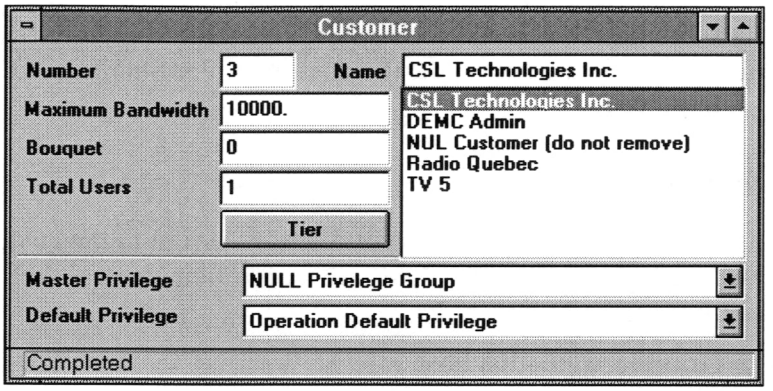
This field indicates if your password is displayed in plain text or asterisks representing each character. Set this field to **ON** to view your password.

User Change Password Actions

Only the standard Update, Undo and Refresh actions are available when the User Change Password window is displayed.

Customer

The Customer window is used to define the names and details of the various customers who use the PowerVu system. When you select Customer Assignment from the Administration menu, the system displays:



Teleport/Administrator	Programmer/Customer
N/A	For guidelines on how to set up Customers, please refer to *Application Note C – PCC-3000 Configuration Notes* and *Application Note D – PCC-3000 Customer Privileges*.

Number

This field indicates the Customer ID used to identify the customer *within the system*. This number is generated by the system and cannot be changed.

Name

Use this field to define (or edit) the name of the customer. If you select a customer for editing from the customer name list box below, it appears in this field. Any changes that you make to the fields in this window will affect the customer name displayed here.

Maximum Bandwidth

Use this field to define (or edit) the total amount of multiplexer bandwidth available to the customer. This value is defined in bits per second.

Ensure that sufficient bandwidth is allocated to the **PCC Administrator**.

Bouquet

This field is reserved for future use.

Total Users

This field indicates the total number of users the customer has assigned *at the customer end.*

Tier

Click this button to display the Tier Map window. The Tier Map window is used to define the tier numbers allocated to a specific customer. For details, see the topic *Tier Map* later in this chapter.

Master Privilege

Use this field to define the *highest privilege* you want to assign to the customer. In this case, highest privilege means the *widest* range of system control and features you want the customer to have available.

Select a privilege group from the list box.

If you need to modify or create a privilege group, see the topic *Privilege Group* earlier in this chapter for details.

Default Privilege

Use this field to define the *lowest privilege* you want to assign to the customer. In this case, lowest privilege means the *minimal* range of system control and features you want the customer to have available.

Select a privilege group from the list box.

If you need to modify or create a default privilege group, see the topic *Privilege Group* earlier in this chapter for details.

Customer Actions

In addition to the standard Update, Undo and Refresh actions, the following actions are available when the Customer window is displayed.

Create

Select Create from the Actions menu to add a new customer to the database. Type in the name of the new customer, assign the master and default privileges if required, allocate tier numbers if required, then click the Update button.

Delete

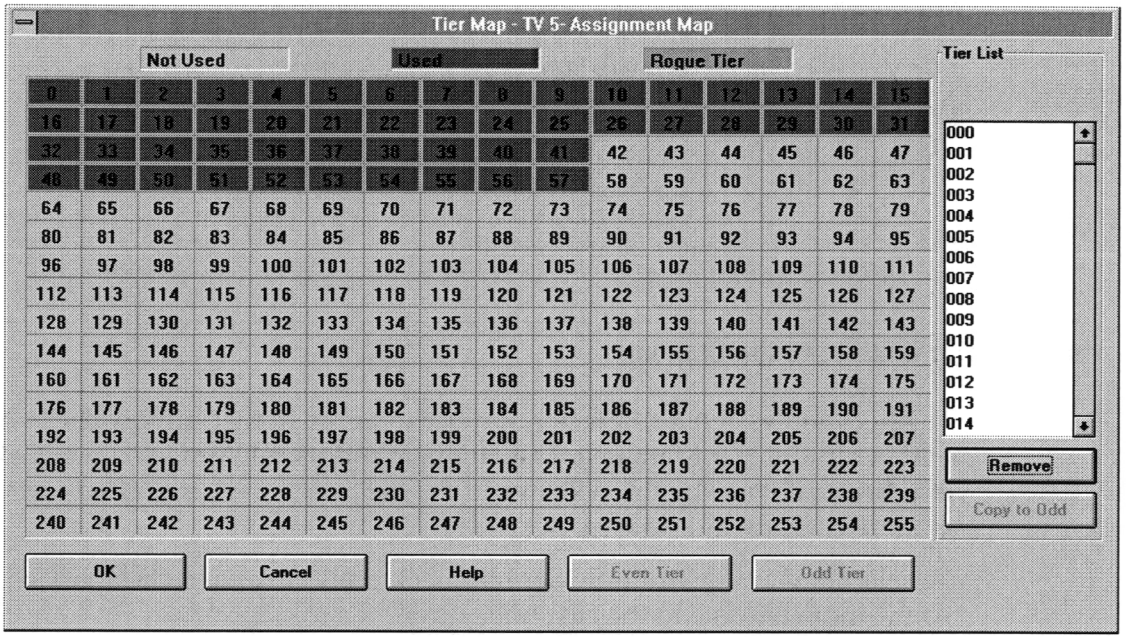
Select Delete from the Actions menu to remove a customer from the database. Ensure that the customer is highlighted in the customer list, then select or click **Delete**.

Tier Map

The Tier Map window allows you to allocate specific tier numbers for use by your customers. Your customers, in turn, use the allocated tier numbers to enable *their* subscribers to receive a particular event by assigning a program tier to the event.

For more information on tiers, see *Chapter 8, Decoder Database Control* in the topic *Program Tiers.*

When you click the **Tier** button on the Customer window, the system displays a window similar to the following:



Note: Only tier bits 0 to 103 can be used. Tiers 104 to 255 are reserved for future use.

Teleport/Administrator	Programmer/Customer
Tier bit zero is reserved for the System Administrator.	Tier bit zero is reserved for the System Administrator. If this condition is violated, the customer may be able to view events belonging to other customers. Tier bits can be shared by customers. It is the System Administrator's responsibility to ensure that tier bits are *intentionally* assigned to two or more customers (to allow for cross-networking), if required.

How the Tier Map window works

The Tier Map window is designed to let you quickly find, assign or modify a specific tier number for the customer.

Note: Only the tier numbers allocated on this window are available to the customer (i.e., the block of numbers highlighted and displayed in this window are the *only* tier numbers the customer will be able to see and use to assign to events.

Tier numbers are color coded as follows:

Color	Description
Grey	Tier is available for use **if** the grey tier cell contains a number.
Red	Tier number is in use.
Green	Rogue tier. This indicates the tier number was *removed* from its assigned use by a superuser (or service provider) but has not yet been **deselected** by the operator. Once the user clicks on a rogue tier, the tier number is de-assigned and available for future use.

Assign a Tier Number to the Customer

To select and assign a single tier number to the customer, simply click on the number in the Tier Map area. The number (and its cell) immediately turns red to indicate it is in use by the system and the tier number is also added to and displayed in the Tier List window area.

To select and assign multiple tier numbers to the customer, click on each tier number you want to allocate to the customer.

Alternatively, if you want to assign a block of numbers, hold down the left mouse button and drag over the block of tier numbers in the map. As you drag, the numbers within the drag box turn red. As soon as you release the left mouse button and click **OK**, the tier numbers are assigned to the customer.

Remove a Tier Number from the Customer

To remove a single tier number, simply click on the number in the Tier Map area. The number and cell immediately turn from red to gray to indicate the tier number is not in use by the system. The tier number is removed from the Tier List window area.

To remove multiple tier numbers, click on each tier number you want to remove from the customer.

Alternatively, if you want to remove a large group of numbers quickly, highlight a tier number in the Tier List box. Hold down the **Ctrl** key and click the left mouse button for all subsequent tier numbers that you wish to remove, then click **Remove**. Both odd and even tier numbers are removed from the customer.

If you change your mind and want to deselect a tier number for removal, hold down the **Ctrl** key and click the left mouse button a second time. The highlight disappears and the tier is not removed.

If you want to remove a range of tier numbers, in the Tier List box highlight the first tier number, then use the scroll button to move to the last tier number in the range. Hold down the **Shift** key and click the left mouse button on the last tier number in the range. All tier numbers in the range are selected for removal. Click **Remove**. Both odd and even tier numbers in the selected range are removed from the customer.

Remove

Click the **Remove** button to remove one (or all selected) tier numbers from the customer's record.

Copy to Odd

Button not activated on this window. Active button only available in the tier map accessed through the Decoder Profile window.

Even Tier

Button not activated on this window. Active button only available in the tier map accessed through the Decoder Profile window.

Odd Tier

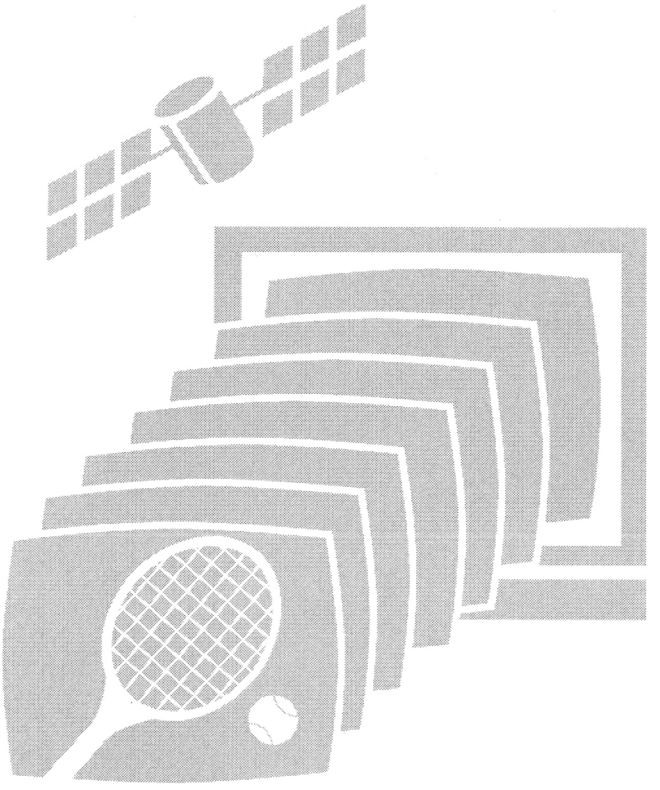
Button not activated on this window. Active button only available in the tier map accessed through the Decoder Profile window.

Tier Map Actions

There are no actions available on the Actions menu when the Tier Map window is displayed.

Click the **OK** button when you have completed any changes to the Tier Map window. Any changes that you make to the customer's program tiers remain in effect until the next time you (or some other user) modifies the tier information for the customer.

Chapter 11 BACKUP AND RESTORE



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Backup/Restore Database Screen 11–4

Backup/Restore System Data Screen 11–9

Introduction

The Backup and Restore functions are a feature of the ***server*** component of the PowerVu PCC-3000 system.

The Backup and Restore functions allow the operator to backup or restore all critical data files. A backup consists of copying data files onto an external storage medium. File backups are made onto 3.5-inch diskettes and database backups are made onto cartridge tapes.

A backup should be made periodically or before significant changes are made to data files. The backup procedure destroys any data that may be resident on the diskettes or cartridge tapes; therefore, caution should be exercised when re-using previous backups.

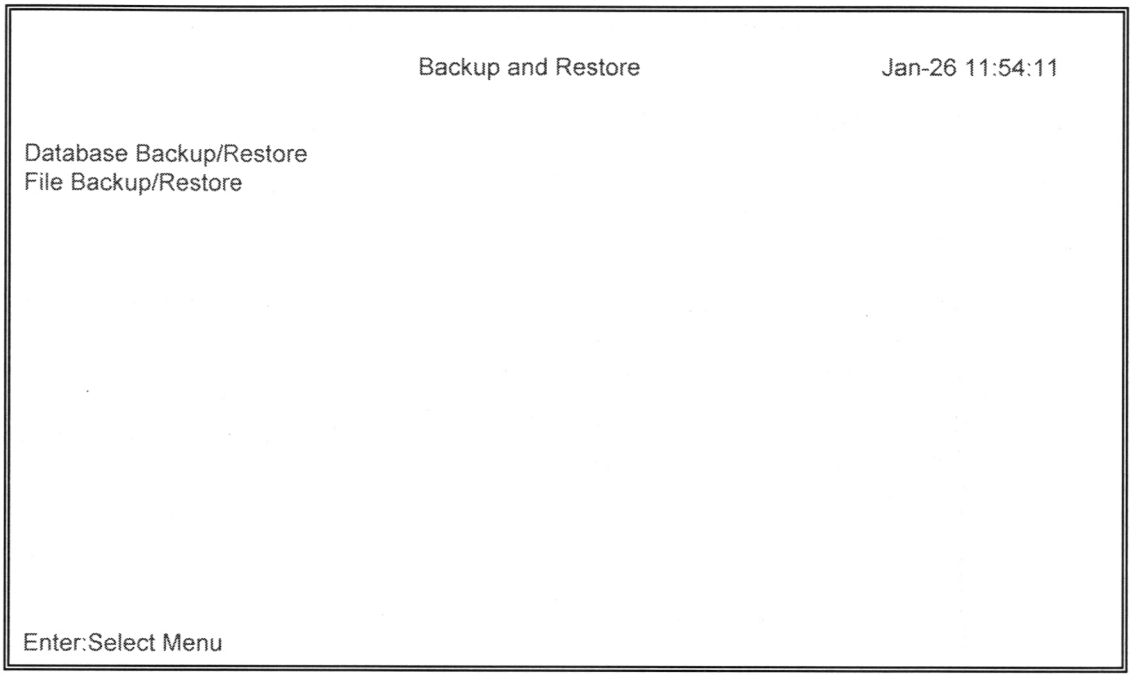
A backup is a two-stage procedure. If a change occurs during the first attempt, a failure occurs upon verification of the second attempt. Please note that no changes to the data files should be implemented during the backup attempt (i.e., bandwidths, decoder authorizations, etc.).

It is recommended that backups be performed at very low usage times (i.e., early hours of the morning) so as not to affect broadcast service.

Backup and Restore Screen

The *Backup and Restore screen* allows the operator to backup or restore all critical data files.

When you choose Backup/Restore on the *Main Menu,* the following screen is displayed.



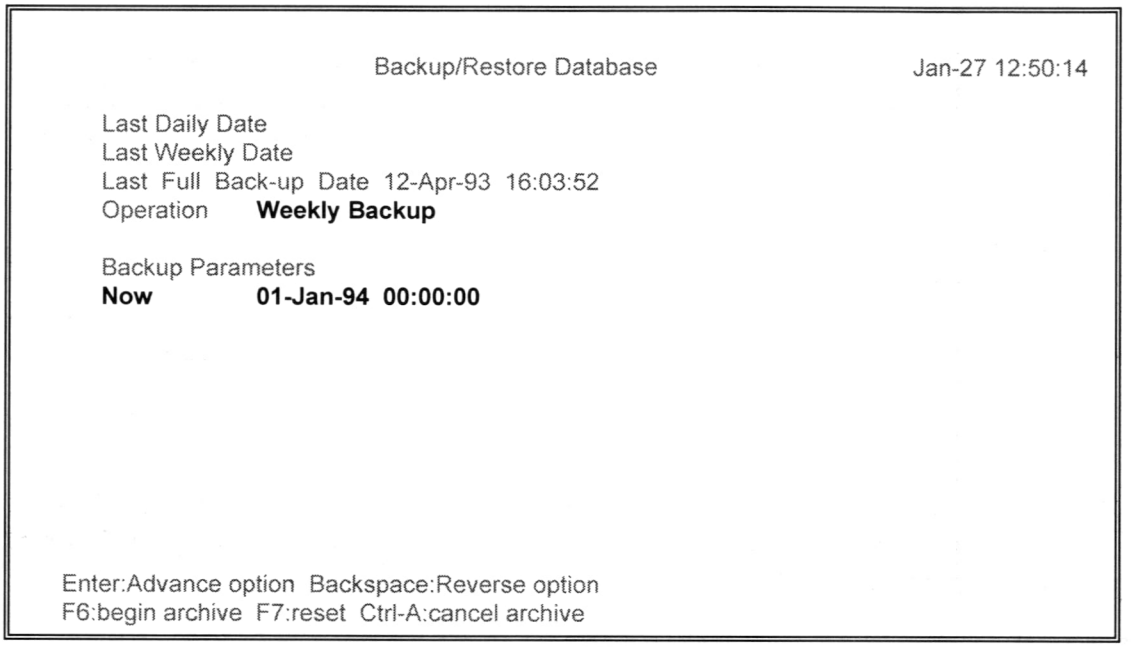
The Database Backup/Restore option is used to backup or restore database data in the Informix database. This data is stored on tape.

It is recommended that a complete database backup be performed at least once a month.

The File Backup/Restore option is used to backup or restore system data files in the "u/emc/database" directory. This data is stored on diskette.

Backup/Restore Database Screen

When you select Database Backup/Restore on the *Backup and Restore screen*, the *Backup/Restore Database screen* is displayed. This screen allows the operator to backup the information in the database management system onto tape. The *Backup/Restore Database screen* example below shows a screen set up to perform a weekly backup.



The current system date and time are recorded as displayed in the top right-hand corner of the screen.

FIELD DESCRIPTIONS – BACKUP/RESTORE DATABASE SCREEN

Last Daily Date

This field displays the date of the last incremental database backup since the Last Weekly backup was performed. If during the daily backup process, the weekly backup does not exist, the Last Full Backup Date is used as a reference. If a daily backup command is issued, it includes all the changes performed to the database from that point forward. If the Last Full Backup Date also does not exist, the system performs a Full Backup, but enters it as the Last Daily Date.

Last Weekly Date

This field displays the date of the last incremental database backup since the Last Full Backup was performed. If a weekly backup command is issued, it includes all changes made to the database since the Last Full Backup. If the Last Full Backup Date does not exist, the system performs a Full Backup, but enters it as the Last Daily Backup.

Last Full Backup Date

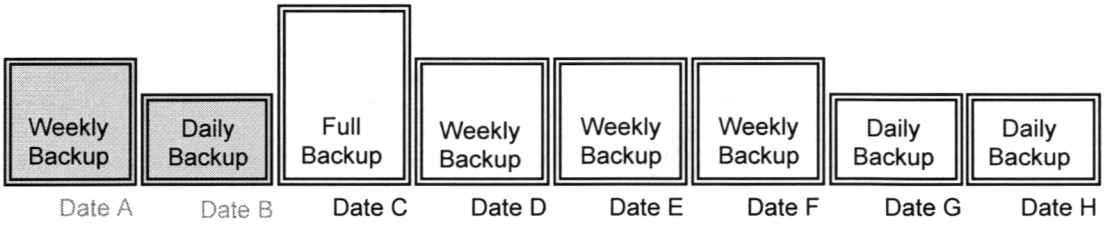
This field displays the date of the last full database backup since the Last Full Backup was performed. If a full backup is issued, the entire database is archived (backed up) onto tape and the corresponding date is entered, regardless of when the last full backup was performed.

Operation

This field allows the operator to define the type of operation to be performed: **Full Backup**, **Weekly Backup**, **Daily Backup**, or **Restore**. When the Restore Operation is selected, the backup parameters are ignored, and the PCC-3000 system screen changes to the single-user (maintenance) mode (if the system is currently in the multiuser mode).

Each of the different types of backup operations can be performed manually by the operator or performed automatically by the system based on the information specified in this field.

Note that if it is necessary to restore the complete database, be sure to start by using the last Full Backup followed by the subsequent incremental backups as required. For example,



If the system crashes after *Date H*, and you need to restore the complete database, you need to start with the *Full Backup* from *Date C* and restore all subsequent backups up to the *Daily Backup* at *Date H* in order to return the system to its state prior to the crash.

Backup Parameters

The Backup Parameter fields allow the operator to define parameters for frequency of the backup operation and the start date and time of the backup operation. Each type of backup can be performed manually by the operator or performed automatically by the system based on the information specified in these fields.

Frequency

Use this field to select how often the backup operation is to be performed. The following selections are available by pressing the **Enter** key:

OPTION	DESCRIPTION
Now	Immediate backup
Once at:	Single backup at the specified date and time
Daily, starting	Automatic Daily backups starting at the specified date and time
Weekly, starting	Automatic Weekly backups starting at the specified date and time

Start Date

Use this field to enter the backup start date for an automatic database backup. When the backup frequency parameter is set to **Now**, the date and time fields are ignored.

Start Time

Use this field to enter the backup start time for an automatic database backup. When the backup frequency parameter is set to **Now**, the date and time fields are ignored.

Note: When restoring the database, only an immediate (**Now**) restore is allowed. The backup parameters are ignored when performing a **Restore** operation.

HOW TO USE THE FUNCTION KEYS ON THIS SCREEN

F6 Press **F6** to start the save or restore operation.

F7 Press **F7** to reset all screen fields and abort any changes made. Only usable if the save or restore operation has **not** been started by pressing the **F6** key.

Ctrl-A Press **Ctrl+A** to cancel the save or restore operation if it is already underway.

How to Backup the Database

To backup the database files to tape, perform the following steps:

1. Insert a blank tape into the tape drive and ensure that it is properly inserted by observing the position of the tape retainer latch. See *Chapter 2* for more information on *Inserting Tapes.*
2. Select the Operation type by moving the cursor to the Operation field. Press **Enter** to select **Daily Backup**, **Weekly Backup** or **Full Backup**.
3. Select the backup frequency by moving the cursor to the Backup Parameters field. Press **Enter** to select **Now**, **Once at**, **Daily starting**, or **Weekly starting**.
4. Select the backup start date by moving the cursor to the next field to the right then type the desired date.
5. Select the backup start time by moving the cursor to the next field to the right then type the desired time.
6. Review the settings and make any necessary changes. Press **F6** to start the backup procedure. If you are performing an immediate backup with **Now** selected in the backup frequency field, the system prompts you to ensure that the tape is loaded. If it is, press **Enter** to continue.

You are not able to perform any other activities until the backup process has been completed. However, any other terminal connected to the system functions normally during the backup process. Your terminal displays a number of messages indicating the backup status (e.g., percentage completed). Once the backup is completed, the system displays the backup statistics and instructs you to label the backup tape and store it in a safe place. You may then continue to perform other functions on the system.

If the backup is automatic, the system does not prompt you with a message other than when performing a screen refresh. The backup occurs at the specified date and time interval(s). When the backup starts at the specified date and time, it operates in the background and does not affect any system activities. However, backup processing can affect system performance, so it is best to schedule it during low activity time periods.

How to Restore the Database

The database restore operation is a two-step process. First, the system changes to maintenance mode which prevents updates to the database that normally occur in multi-user mode. Second, once in maintenance mode, the system performs the actual Restore operation.

To restore the database from tape, perform the following steps:

1. Insert the appropriate backup tape into the tape drive and ensure that it is properly inserted by observing the position of the tape retainer latch. See *Chapter 2* for more information on *Inserting Tapes*.
2. Set the Operation field on the *Backup/Restore Database screen* to **Restore**.
3. Press **F6** to start the restore function. If the system is running in multi-user mode, the system prompts you with a message indicating that the function requires the system to be placed in maintenance mode. Enter **Y** (Yes). The system then issues a message to all other users indicating that the system is to be shut down and that they should log off the PCC-3000 system within the next 30 seconds.

   The system then proceeds to shutdown and reboot itself in maintenance mode with only your terminal remaining active. Note that the screen goes blank while the reboot operation takes place.
4. Mount the appropriate tape when the system prompts you for it (including the archive level and date). Press **Enter** to start the restore. Insert Full Backup tape(s) first followed by Weekly Backup, then Daily Backup tapes.

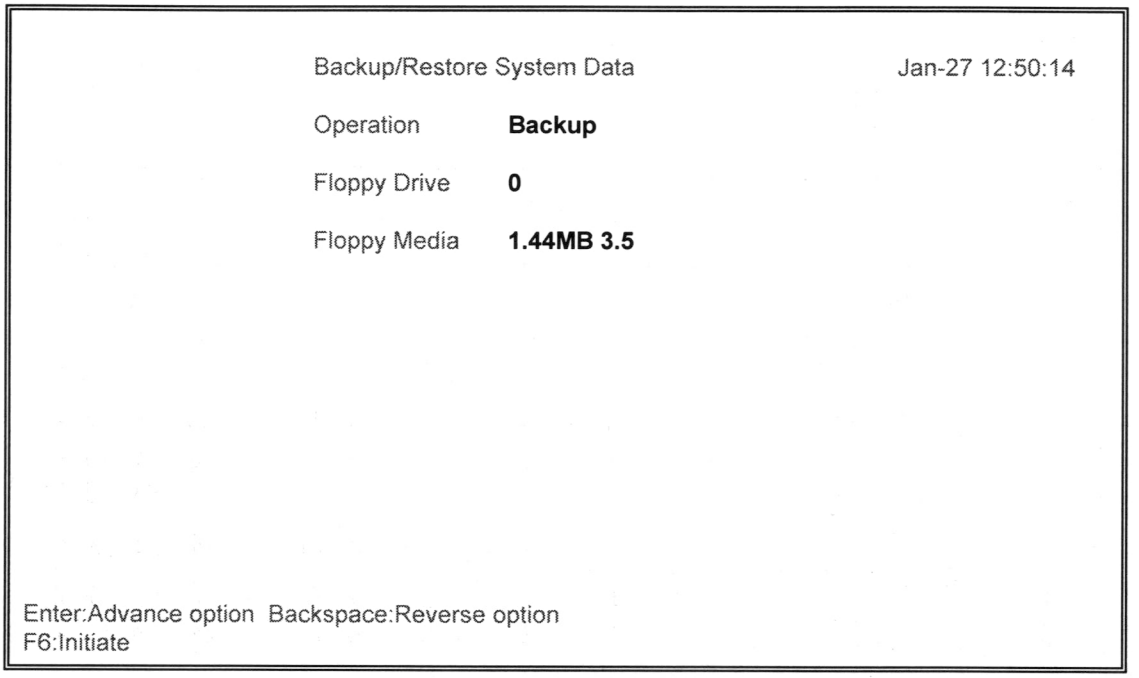
   Since the system is now in maintenance mode, you are not prompted with any more messages until the system has completed the database restore process. Once the restore process is finished, you are asked if there are any other backup tapes to restore.

   Note: If your backup contains more than one tape (i.e., when a Full Backup is followed by a Weekly Backup, Daily Backup or both backups), you should respond with Y (Yes). If your backup set contains only one tape, then respond with N (No).

   At this point the system indicates that it will reboot in multi-user mode, after which all terminals are re-activated.

Backup/Restore System Data Screen

When you select File Backup/Restore on the *Backup and Restore screen*, the following screen is displayed. This screen is used to save system data required by the PCC-3000 system for successful operation. System data consists of multi-session key data, system administration information (user names, privileges and passwords), uplink configuration information, and virtual channel service assignments.



FIELD DESCRIPTIONS – BACKUP/RESTORE SYSTEM DATA SCREEN

Operation

Use this field to select either the **Backup** or **Restore** operation. Press **Enter** to change the operation displayed.

Floppy Drive

Use this field to select either floppy drive **0** or **1** for a backup or restore operation. Floppy Drive 0 is the 3.5-inch diskette drive and Floppy Drive 1 is the 5.25-inch diskette drive (if equipped). Enter decimal data in this field, or press + to increment from 0 to 1 or - to decrement from 1 to 0.

Floppy Media

Use this field to select a high or low density format for the selected drive. Although you may select any of the available media types for any of the selected

drives, only the valid combinations listed below can be used. Any other combination displays an error message. The valid drive combinations can be selected by pressing **Enter**.

Floppy Drive 0	Floppy Drive 1
1.44 MB 3.5	1.2 MB 5.25
720 KB 3.5	360 KB 5.25

Note that most systems are no longer equipped with 5.25 diskette drives. However, this option remains for those users whose systems still contain 5.25 drives.

How to Backup System Data onto Diskette

To backup the system data you require a number of floppy disks that are either blank or contain data that you no longer need.

Note: The system indicates the number of diskettes required when the backup function is initiated (when **F6** is pressed). Label the disks SYSTEM DATA BACKUP in numerical order and include the date and time of backup as shown on the Backup/Restore System Data screen.

1. Move the cursor to the Operation field, then press **Enter** until **Backup** is displayed.
2. Select the Floppy Drive number – either **0** (3.5 inch) or **1** (5.25 inch).

   Note that most systems are no longer equipped with 5.25 diskette drives. However, this option remains for those users whose systems still contain 5.25 drives.

3. Select the Floppy Media type. See the *Floppy Media* field for the selectable media types and valid combinations.
4. Press **F6** to start the backup procedure and then follow the instructions displayed on the screen. The system indicates the number of disks required and asks you if you need to format any. If all the required disks are formatted, proceed with step 5 by answering **n**.
5. Insert the first diskette (Disk 1) into the disk drive and press **Enter**.

   Note: Refer to Chapter 2, Getting Started, for more information on inserting diskettes into disk drives. The system prompts you for diskettes as they are needed and indicates if any errors have been encountered.

6. When the backup procedure is complete, remove the last diskette and store it with the others in a safe place.

How to Restore System Data from Diskette

To restore the system data, you require the floppy disks containing system data previously backed up.

Note: Because the system default configuration is multi-user mode, the system must be placed in maintenance mode to restore system data. As a result, all users (with the exception of the user performing the restore operation) are forced to complete their activities within 30 seconds, as indicated by a system prompt. Therefore this procedure should be scheduled so as not to interfere with other users' activities.

1. Move the cursor to the Operation field, then press **Enter** until **Restore** is displayed.
2. Select the Floppy Drive number – either **0** (3.5 inch) or **1** (5.25 inch).

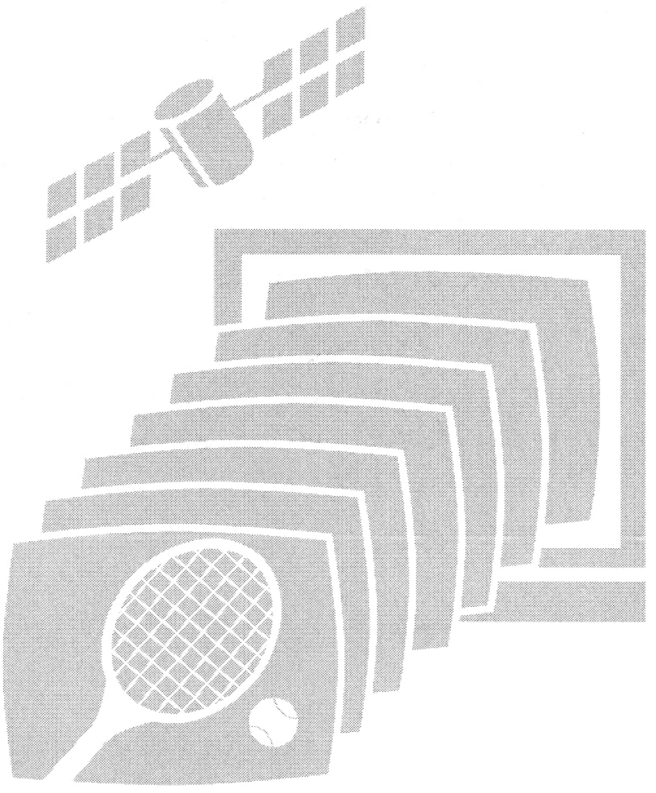
   Note that most systems are no longer equipped with 5.25 diskette drives. However, this option remains for those users whose systems still contain 5.25 drives.
3. Select the Floppy Media type. See the *Floppy Media* field for the selectable media types and valid combinations.
4. Press **F6** to start the restore procedure and then follow the instructions displayed on the screen. The system prompts you with a request to put the system into maintenance mode as follows:

   "This operation puts the system into maintenance mode. Continue? (Y/N)"

   Answer **Y**. The PCC-3000 system then locks out all users except the one who initiated the restore operation, shuts down and then reboots itself in single user mode.
5. Log on to the system and return to the *Backup/Restore Database screen*. Set the Operation field to **Restore** and press **F6** to re-initiate the restore operation. With the system in the single user mode, you can proceed with the restore procedure in step 6 and answer the system prompts.
6. Insert the diskette into the disk drive and answer the system prompts.

   Note: Refer to Chapter 2, Getting Started, for more information on inserting diskettes into the disk drives.
7. When the restore procedure is complete, remove the last diskette and store it with the others in a safe place.

APPLICATION NOTES



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Application Note A
TYPES OF SYSTEM SHUTDOWN

There are two types of system "shutdown". A shutdown may consist of a shutdown of the PCC-3000 *server* application software only, or a complete shutdown of both the PCC-3000 server software and the computer.

Note: The server software is the UNIX-based *master control* software; and not to be confused with the Windows-based *client* software covered in this manual. If you need to shut down the client software, see *Chapter 2, Getting Started*, in the topic *Log Off the PCC-3000 Client System*.

Shut Down PCC-3000 Server Software

The PCC-3000 software server application **can only be shut down on the server**. It can only be stopped via the Unix operating system. If you need to shut down the PCC-3000 server software to perform updates or system maintenance, use the following procedure:

Note: If for any reason, the PCC-3000 system shuts down, the broadcast system (i.e., decoders, multiplexers, etc.) remains in the same configuration it was at the moment of software shut down. Once you restart the PCC-3000 software, the broadcast system is immediately controllable as it was in its pre-shutdown state.

1. Press **Alt-F1**. The system displays the prompt:

   login:

2. At the "login:" prompt, type **emcadmin** and press **Enter**. The system displays the prompt:

   password:

   See the system administrator for a password to shutdown the PCC-3000 software.

3. Type the correct password and press Enter. The system then displays the Unix prompt:

   /u/emc>

   Note: The directory may be different on your system, depending on the configuration.

4. Type **emc stop** and press **Enter**. The system displays the message:

   Stopping DEMC.....

   It may take up to 30 seconds for the system to completely stop, after which the following message is displayed:

   [DEMC Shutdown Complete]

   If the PCC-3000 system cannot stop, the system displays the message:

   DEMC stop aborted.

   If this message is displayed, contact the system administrator for assistance.

5. Type **exit**.

Start or Restart PCC-3000 Software

At the emcadmin prompt, type one of the following commands (as required):

emc start starts the PCC-3000 server application software

emc restart stops the PCC-3000 server application software and restarts the application

Complete UNIX System Shutdown

Both the PCC-3000 server software and the computer may be shut down when necessary for maintenance or other reasons. Start at step 1 if you need to shut down the PCC-3000 server software. If the software has already been shut down, start at step 2 to shut down the computer.

Note: It is recommended that you login on the ALT-F1 console when performing a UNIX shutdown, since system messages are always displayed on the ALT-F1 console when the system is restarted.

1. Perform *Shut Down PCC-3000 Software* as previously described to stop the PCC-3000 software application.

   The system then displays the prompt:

   login:

2. Type **root**. The system then displays the prompt:

   password:

3. Enter your password. See your system administrator or network manager for a password to shut down the computer.

4. Type **shutdown -g0 -y**. A number of messages are then displayed with the last message being:

   ****Safe to Power Off****

   or

   Press Any Key to Reboot

   The shutdown procedure takes about one minute. When the system displays the last message above, the procedure is complete.

5. Turn off the power switch on the computer and the UPS.

WARNING: The PCC-3000 server software and the computer should be shut down **only** for maintenance (or other special reasons). The computer and UPS power switches must **not** be turned off until the correct shut down procedures are completed. If the software or the computer must be shut down, the above procedures **must** be followed. Otherwise, unpredictable results and/or malfunctions may occur.

Application Note B
NETWORK CONNECTION APPLICATION NOTE

To connect the PCC-3000 server and client PC to a network (LAN, WAN, etc.), the following items require consideration:

- The network must be TCP/IP based or capable of transferring TCP/IP data.
- A valid, unique IP address must be assigned to the PCC-3000 system server computer.
- The points of physical interface are the unused Netflex ports - or comparable network card - (not the utilized ports for PowerVu equipment communication) on the rearpanel of the server and client PC computer chasses.
- Both an AUI dB 15 and an RJ45 (10 base T) port are available, although only one can be active at any time (AUI dB 15 by default).
- To enable the RJ45 port, the port must be reconfigured using the EISA configuration utility.
- If a BNC connection is required, a customer supplied AUI->BNC transceiver adapter is required (to date only the MILAN MICRO-MAU Model # MIL-05T Ethernet Transceiver has been used successfully).
- The OnNet software installed on the client PC must be configured to operate over a network.

Application Note C
PCC-3000 CONFIGURATION NOTES

This document contains PCC-3000 configuration recommendations with the emphasis on common carrier features.

The following terms are used throughout:

- *Administrator* – the Teleport (or Operator) who owns the PCC-3000 system
- *Customer* – a Programmer able to use the system in a restricted manner determined by the Administrator
- *Privilege Group* – each privilege group has a distinct name and an associated set of customized access privileges to various parts of the system
- *User* – an individual login account on the PCC-3000. Each user has a password, is associated with a particular customer, and belongs to one privilege group
- *Devices* – encoders, multiplexers and modulators.

Note: Any customer may have a number of users and these users may or may not share privilege groups.

Special Customers

The PCC-3000 system has three built-in special Customers:

Customer Name	Customer ID	Description
NULL Customer	0	Identifies a customer who has no ownership of any system components (e.g., no devices physically installed).
PCC Administrator	1	Identifies the special customer who has access to all parts of the system.
SHARED Customer	2	Identifies customers who share ownership of installed system devices.

Setting Up the PCC Administrator

Before you set up regular Customers, ensure that the following items are covered for the **PCC Administrator** record.

1. Ensure that all multiplexers are defined as shared devices. Set the Customer field on each multiplexer to **SHARED Customer**, if necessary. For details, see *Chapter 3*, in the topic *Multiplexer Configuration*.
2. Ensure that the Number field in the Customer window is set to the same value as the Customer Code field in the Network Security Overview window.

   Note: The value in the Number field should correspond to the 3-digit numeric code assigned to the particular Administrator by Scientific-Atlanta's administration department. This enables decoder distribution diskettes to be loaded by the system (the system checks the header field of the diskette and matches it against the Number field described here).
3. Ensure that sufficient bandwidth is allocated to the **PCC Administrator**.
4. Ensure that all privileges in the System Administrator privilege group are set to **Yes**. This ensures that the Administrator's actions are *not* restricted so that, for example, all encoders and decoders can be assigned to different customers, as required.
5. Assign tier bits to the **PCC Administrator** in the Tier Map – Assignment Map window, as required. Tier bits should be assigned in the range from **0** to **103**.

   Note: Tier bit 0 should *always* be assigned to the PCC Administrator.

   When *upgrading to* the PCC-3000 system, ensure that any tier bits in use by *any* of the PCC Administrator's decoders are included in the new tier bit assignment. Otherwise, some of the Administrator's decoders may be able to view Customers' programs. Alternatively, you may clear the tier bits on all Administrator's decoders (e.g. using a global edit) and then reset them to conform to the Administrator's desired assignment pattern.

Setting Up a Customer and Corresponding Privilege Group

Creating a Customer is a two-step process.

1. Set up the Customer record with dummy privileges. Be sure to note the following:

   a) Set the Number field on the Customer window to the unique three-digit numeric customer code assigned by the S-A administration department. The value in this Number field is used to map to our own system-assigned, non-editable ID field (this mapping is used when loading decoder records from distribution diskettes).

   Note: If the Number field value is unknown it may be left as the default (**-1**). Remember to set it to the actual value before any distribution diskettes are loaded that contain decoders for this customer.

b) Set the bandwidth for the customer carefully. Allow a sufficient bit rate to operate whatever service/equipment will be assigned to the customer. Note that the customer bitrate calculation only includes the rates for encoders and does *not* include any multiplexers.

c) Set both the Master Privilege and Default Privilege fields to **System Administrator** (i.e., all privileges are enabled).

d) Save the Customer record.

2. Modify the Customer record to customize the *actual* privileges granted to the Customer. Be sure to note the following:

a) Use the Privilege Group window to create a new privilege group. Copy the **System Administrator** group and assign it an appropriate name.

b) In the Privilege Group window, set the field group privileges to **No** as required. Be especially careful that *no* Add or Delete privileges are assigned for Virtual Channel, and that *no* privileges at all are given for Ownership/ Customer Assignment. For more information, see *Application Note D, PCC-3000 Customer Privileges.*

c) In the Customer window, set the Master Privilege and Default Privilege to the newly-created privilege group.

d) Save the Customer record.

Creating a User

A user can only be added after:

- the corresponding customer record has been set up
- a privilege group has been set up for the customer.

When adding a user, be sure that you use the appropriate privilege group. Otherwise, the user will be set up for the wrong customer.

Assigning Tier Bits

Each customer is limited to specific tier bits which can be used for setting up events or decoders. The Administrator allocates those tier bits that the customer is entitled to use.

Note 1: **Tier bit zero should never be assigned to a customer.** Tier bit zero is reserved for the System Administrator. If this condition is violated, the customer may be able to view events belonging to other customers.

Note 2: Tier bits can be shared by customers. It is the System Administrator's responsibility to ensure that tier bits are *intentionally* assigned to two or more customers (to allow for cross-networking), if required. Otherwise, it would allow those customers to view each other's programs.

Note 3: **Customers should be restricted to using tier bits from 1 up to and including 103**. Tier bits 104 to 255 are reserved for future use.

Assigning Encoders

Use the Customer field on the Encoder Configuration window to assign an encoder to a Customer.

Note: To ensure that bandwidth allocations are not violated, the PCC-3000 software does not allow the Customer field on an encoder to be changed unless the bitrate used by the encoder is **zero**. This means, when you want to change the ownership of an encoder, that all the bitrates for its channels must be set to zero, and all services that use that encoder (on all virtual channels) must be disabled.

Creating Virtual Channels and Default Events

Use the Customer field on the Service Assignment window to assign a virtual channel and corresponding services for the Customer. Be sure to select the appropriate Customer Name in the Customer field ***before*** you save the virtual channel assignment.

You cannot edit the Customer field in a saved/existing virtual channel. If a Customer field contains the wrong Customer name in a saved/existing virtual channel, you must delete the incorrect record (in the Service summary window) and add a new virtual channel record in its place.

Note: When a new virtual channel is created, any associated **default event** has tier bit 0 set. Remember that **tier bit zero should never be assigned to a customer.** The Administrator must clear tier bit 0 on the default event and replace it with the lowest tier bit that was assigned to the customer on the Tier Map – Assignment Map window.

Each default event must have at least *one* tier bit associated with it.

Creating an Inactive Refresh Task

Customers cannot create or modify refresh tasks themselves. Therefore, the Administrator must set up one refresh task for each Customer.

Create a refresh task assigned to the new Customer and leave it in the *Inactive* state.

Assigning Decoders

Decoders can **only** be assigned by the Administrator. There are three ways to assign a decoder to a Customer.

Distribution Diskette Loading

Use a distribution diskette to load decoder records. The diskette may contain one or more decoder records earmarked for one or more customers.

1. Log in as **emcadmin** at the UNIX prompt.

2. Ensure that the distribution diskette is in the drive and type in:
   distload.sh
3. Ensure that the displayed decoder information is accurate *before* the data is loaded into the system. The system displays the Customer ID for each decoder record on the diskette. This identifies the specific decoder that will be assigned to the customer when the load is initiated.

   Note: If the load program cannot determine the customer from the distribution diskette record, it displays "Invalid" against the customer ID. This could be caused by a genuine error (e.g. wrong disk being used), or if the Number field for the corresponding customer record has not been correctly set.

When you exit from the loading program, the system goes back to the Unix prompt.

Manual Loading

Use the Add Decoder window to add decoders manually into the system. With this method you can add only one decoder at a time. Set the Customer field on the Decoder Profile window (the window that appears when you click **OK** after entering data in the Add Decoder window) to assign the customer number to the decoder.

Changing Ownership of Existing Decoders

Use the Customer field on the Decoder Profile window to *re-assign* a new customer number to an existing decoder record. This can only be done one decoder at a time.

Note: If there are any odd or even tier bits set on the decoder, the tier bits should first be cleared. Once the decoder has been assigned to the new customer, new tier bits may be assigned to the decoder *provided* they conform to the overall tier bit numbers allocated for the customer's use.

Application Note D
PCC-3000 CUSTOMER PRIVILEGES

This document contains customer privilege assignment recommendations for the PCC-3000 system which are recommended for use by the Administrator/Teleport.

The following terms are used throughout:

- *Read* – also means view/see
- *Update* – also means change
- *Add* – also means create/copy
- *Delete* – also means remove
- *N/A* – denotes that the permission setting is not applicable (i.e., not used)
- *X* – denotes a feature planned for a future release.

Privilege Considerations

The following is a list of points to consider when first setting up a Programmer/Customer. At the end of this topic you will also find a table listing all available privileges on the PCC-3000 system and some suggestions as to how these may be set up for your Programmer/Customers.

Preliminary Questions

1. ***What are the typical privileges you wish to assign to your Programmer/Customers?***
2. ***What other privilege groups should be set up for the Programmer/Customers?***
3. ***Does the Programmer/Customer own the devices (i.e., encoders)?***

   If not, the customer should be set up with a bandwidth of zero, and all permissions for the following privileges should be set to **No**.

   - Uplink Device Configuration
   - Multiplexer Configuration
   - Encoder Configuration
   - AV Switcher Configuration
   - Modulator Configuration

If the Programmer/Customer does own devices, what amount of bandwidth should be assigned to them? This will depend on the overall available system bandwidth.

4. *Are any services scrambled?*

   If *none* of the services in the whole network is scrambled, tier bits do not need to be assigned to your Programmer/Customers.

   However, if *any* services in the whole network are scrambled, the following apply:

   a) Each Programmer/Customer must be assigned at least one tier bit. This tier bit may be used to set up the default event on the Programmer/Customer's virtual channels.

   b) Devise a strategy on how to assign the tier bits (1 to 103) among your Programmer/Customers, based on the following considerations:

      Note: This will primarily affect the Event and Decoder settings.

      - How many Programmer/Customers will there be in total?
      - Will any customers share tier bits? If so, which tier bits will be shared?
      - Will there be a grouping or numbering strategy devised for tier bits?
      - Which specific tier bits will be assigned to which specific customers?

5. ***What will the limitations be on virtual channels?***

   You need to decide how the 500 virtual channels will be divided among the Programmer/Customers, based on the following considerations:

   - Will virtual channels be restricted to services from encoders owned by the Programmer/Customer?
   - Will Programmer/Customers be able to use services from other Programmer/Customers' encoders as well as their own?

     Note: If virtual channels are set up to use services from two or more Programmer/Customers, the Programmer/Customers should not be allowed to update their virtual channels.

   - Will there be a grouping or numbering strategy devised for virtual channels?

Privilege Fields Listing

The table on the following page summarizes the recommended privileges to be assigned to a Programmer/Customer by the Administrator/Teleport. If the permission cell is shaded, it may be set either to **Yes** or **No** (depending on the Programmer/ Customer's particular requirements).

Field No.	Field Group	Read	Update	Add	Delete	Set to YES if you want the Customer to...
1	Uplink Device Configuration		No	N/A	N/A	See the Uplink Configuration window
2	Decoder Database					Read/Update/Add/Delete decoders
3	Virtual Channel			No	No	Read/Update their own virtual channels
4	Redundancy Configuration		No	N/A	N/A	Read the Redundancy Configuration (S-A recommends No)
5	Network Security		No	N/A	N/A	Read Network Security data (S-A recommends No)
6	Bandwidth Allocation			N/A	N/A	Read/Update the Bandwidth Allocation
7	PID Summary		No	N/A	N/A	Read the PID Summary
8	Frequency Plan/Frequency Assignment		No	No	No	Read the Frequency Plans (S-A recommends No)
9	Event Schedule					Read/Update/Add/Delete events
10	Refresh Task		No	No	No	Read refresh tasks
11	Alarm Monitor	No	No	N/A	N/A	
12	Alarm Auditing	No	No	N/A	N/A	
13	Transaction Log Monitor	No	No	N/A	N/A	
14	Transaction Log Auditing	No	No	N/A	N/A	
15	Decoder OS Download	No	No	N/A	N/A	
16	User Assignment					
17	Privilege Group Assignment					
18	Customer Assignment	No	No	No	No	
19	Decoder Transmission Control		No	N/A	N/A	Read Decoder Transmission Control data (S-A recommends No)
20	Decoder Transfer	X	X	X	X	N/A
21	Mux Configuration		No	No	No	Read the Mux configuration
22	Encoder Configuration			No	No	Read/Update their encoder configurations
23	AV Switcher Configuration		No	No	No	Read the AV Switcher Configuration (S-A recommends No)
24	Modulator Configuration		No	No	No	Read the AV Modulator Configuration (S-A recommends No)
25	Ownership/Customer Assignment	N/A	No	N/A	N/A	

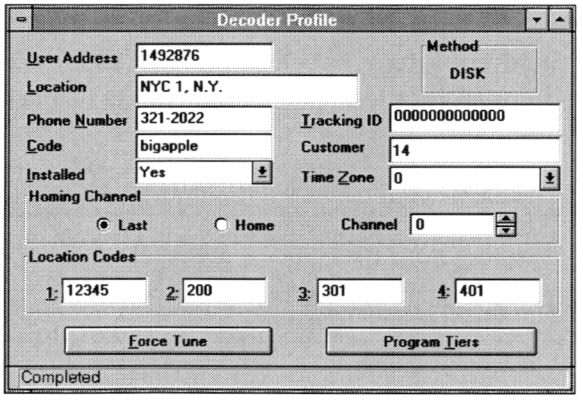
Application Note E
DATABASE SEARCH AND GLOBAL CHANGE FEATURES

The PCC-3000 system uses Informix RDMS software to manage the decoder database. This application note describes how to use these capabilities to simplify editing of decoder records. This information refers to commercial decoders, but this application note is also relevant to consumer decoder records.

There are three main windows used for selecting and making changes to a subset of all the records in the commercial database. The entire decoder database is referred to as the *decoder population* and any subset of the decoder population is referred to as a *select database*.

Decoder Profile

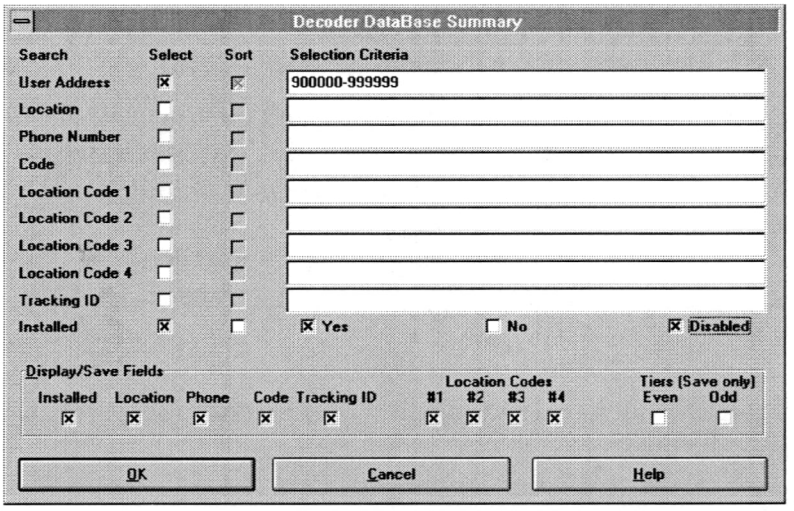
The Decoder Profile window is used to edit individual decoder records. A typical window is shown below.



Decoder Database Summary

Searches of the database can be based on multiple criteria. The illustration below shows the Decoder Database Summary window. The Decoder Database Summary window is used to select a subset of the decoder population for any subsequent operations in the Decoder Profile window and/or the Decoder Global Change window.

There are currently 10 searchable criteria: User Address, Location, Phone Number, Code word, Location Codes 1 through 4, Tracking ID, and Installed flag. Each search item may be enabled in either search or sort mode; otherwise, it is ignored. The search mode is used to retrieve records in the sequence they were loaded into the database without regard to order. The sort mode is used to retrieve records sorted in an incrementing order based on the parameter entered by the operator. Records retrieved must satisfy each search criteria.



The following table describes the delimiting characters you can use (depending on the search field type) to refine the search criteria. All search fields (except for Installed) will accept up to 80 characters.

Search Field	Type	Delimiting Characters
User Address	Numeric (Decimal)	, (comma) - (hyphen) > (greater than) < (less than) = (equals)
Location	ASCII	* (asterisk) , (comma)
Phone Number	ASCII	* (asterisk) , (comma)
Code	ASCII	* (asterisk) , (comma)
Location Code 1,2,3,4	Numeric (Decimal)	, (comma) - (hyphen) > (greater than) < (less than) = (equals)
Tracking ID	(Decimal & Hexadecimal)	, (comma) - (hyphen) > (greater than) < (less than) = (equals)

Installed Row

The Installed row only offers you the choices defined by the check boxes.

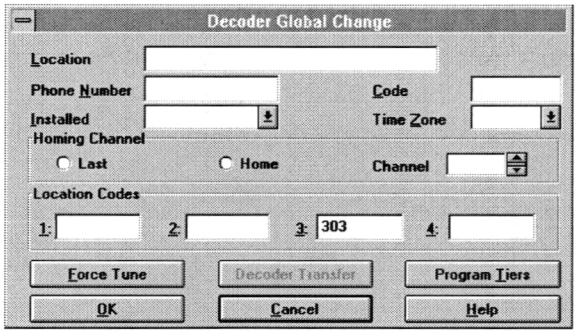
Yes = select all installed decoders
No = select decoders *not* installed
Disable = select disabled decoders.

Note: One, two, or all three can be checked on. For example, if all three check boxes are checked **On**, the system searches for *all* installed decoders, *all* decoders not installed, and *all* disabled decoders in the database.

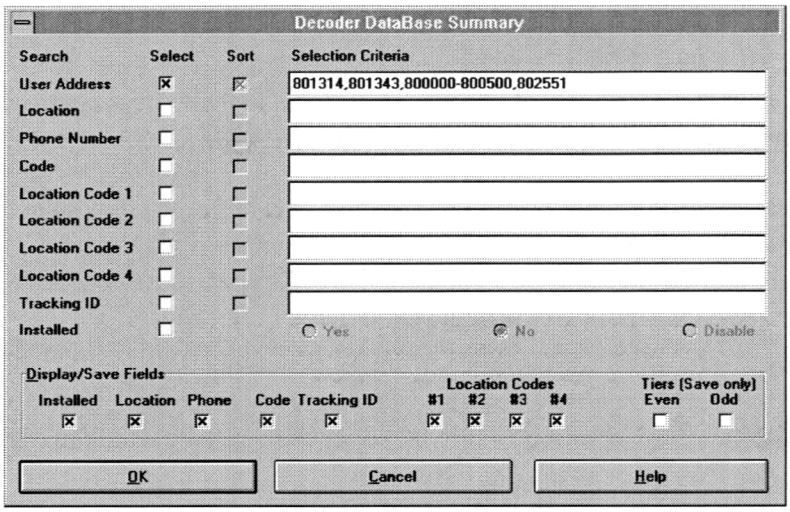
The subsequent records retrieved by the search are referred to as a select database. The select database may be stepped through in sequence with the previous and next options on the Actions menu (or by clicking the appropriate toolbar icon). Any subsequent global edit operation will affect *this* select database.

Decoder Global Change

Global edits can be applied to multiple parameters. The Decoder Global Change window is used to perform multi-parameter change operations on the select database of the decoder population. Most of the parameters on the Decoder Profile window can be changed, such as: Location, Phone Number, Code, Installed flag, Force Tune, Channel, Timeout, Homing Channel, Time Zone, Location Codes 1 through 4, and Program Tiers. The global change operation prompts the operator for a confirmation, then steps through the select database until all records are changed.

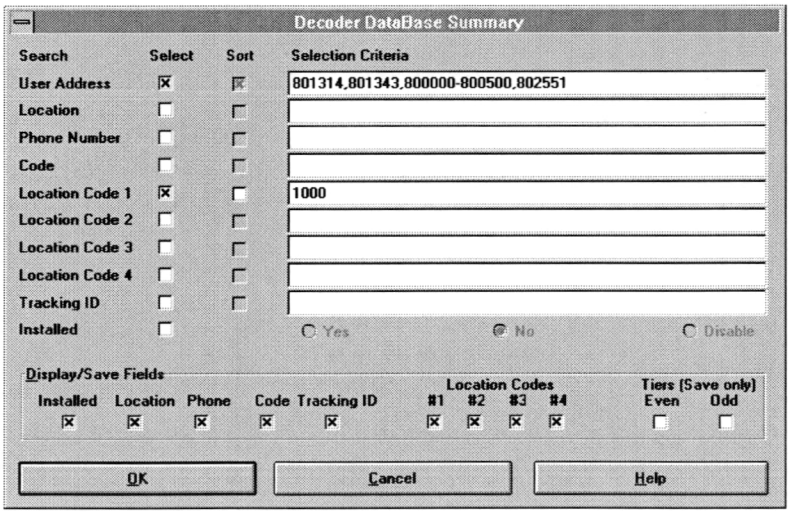


Example 1



Example 1 shows a sorted search for records with User Addresses 801314, 801343, 802551 and all decoders in the range 800000 through to 800500 inclusive. If all the selected decoders exist, a sorted User Address search will retrieve 800000-800500, 801314, 801343, and 802551 in ascending order respectively. This select database may be stepped through in sequence with the Previous and Next options on the Actions menu.

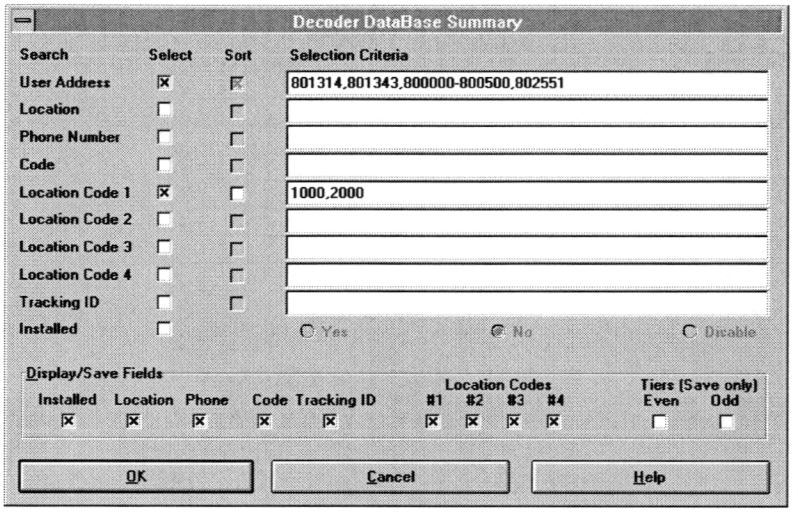
Example 2



Example 2 depicts a multi-criteria search sorted by User Address and with Location Code 1 searched. The search will retrieve records of User Addresses 801314, 801343, 800000-800500, and 802551 with a Location Code 1 value of 1000. If all the selected decoders exist, a sorted User Address search will display 800000-800500, 801314, 801343, and 802551 in ascending order respectively. This select database may be

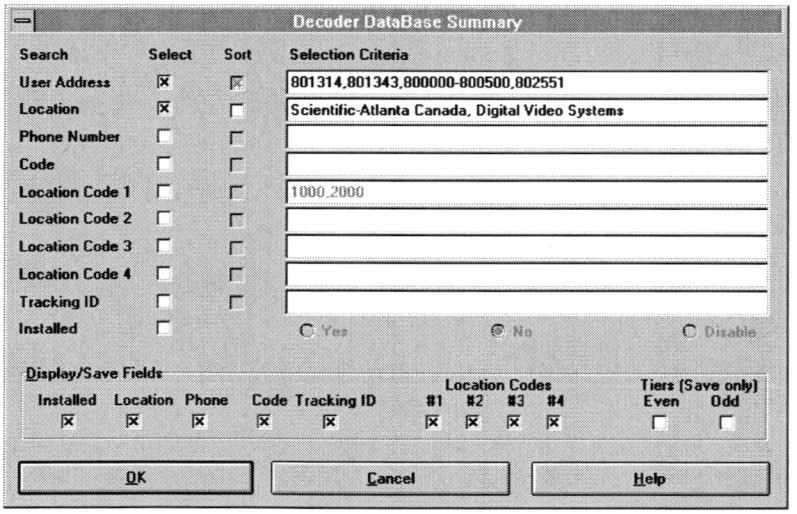
stepped through in sequence with the Previous and Next options on the Actions menu.

Example 3



Example 3 shows a multi-criteria search sorted by both User Address and Location Code 1. The search will retrieve records of User Addresses 801314, 801343, 800000-800500, and 802551 with a Location Code 1 value of 1000 followed by any remaining records of User Addresses 801314, 801343, 800000-800500, and 802551 with a Location Code 1 value of 2000. This select database may be stepped through in sequence with the Previous and Next options on the Actions menu.

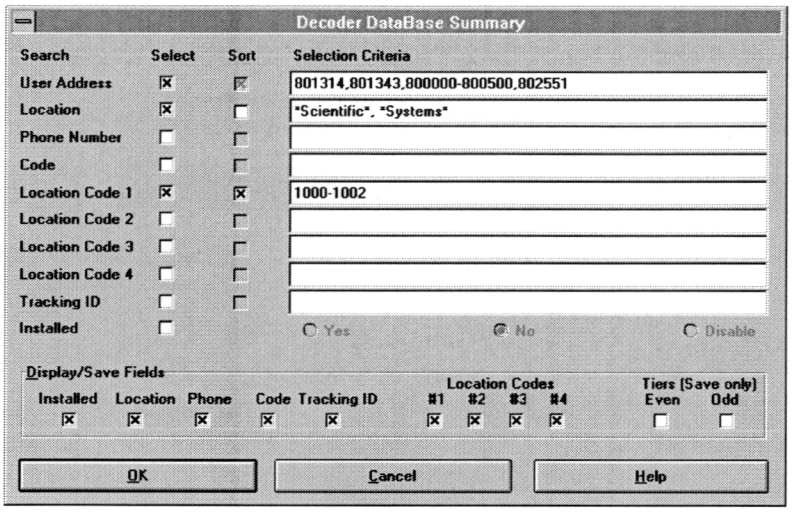
Example 4



Example 4 shows a search for all records with the Location exactly matching either "Scientific-Atlanta Canada" or "Digital Video Systems". The search will retrieve all records with location matches in the sequence that it was originally loaded into the

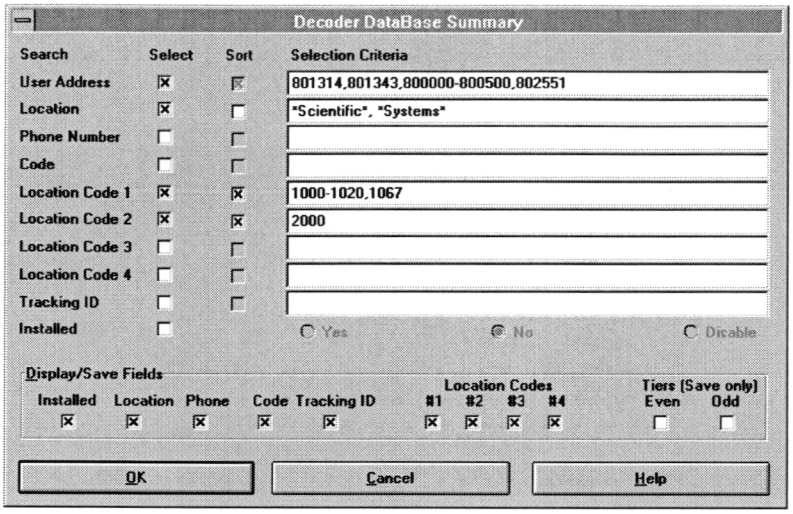
database. This select database may be stepped through in sequence with the Previous and Next options on the Actions menu.

Example 5



Example 5 shows a multi-criteria search sorted by User Address, Location Code 1, and Location. The Location search criteria will restrict records only to those that contain either "Scientific" or "Systems". With the Location restriction in effect, the search will retrieve records of User Addresses 800000-800500, 801314, 801343, and 802551 with a Location Code 1 value of **1000**; followed by any records of User Addresses 800000-800500, 801314, 801343, and 802551 with a Location Code 1 value of **1001**; followed by any remaining records of User Addresses 800000-800500, 801314, 801343, and 802551 with a Location Code 1 value of **1002**. This select database may be stepped through in sequence with the Previous and Next options on the Actions menu.

Example 6



Example 6 shows a multi-criteria search sorted by User Address, by Location, and with both Location Codes 1 and 2 searched and sorted. The group search criteria will restrict records to those with a Location Code 1 value in the range from 1000 to 1020 inclusive or 1067, and a Location Code 2 value of 2000. The search will retrieve records of User Addresses 800000-800500, 801314, 801343, and 802551 with a Location containing either "Scientific" or "Systems", and the Location Code restriction. This select database may be stepped through in sequence with the Previous and Next options on the Actions menu.

Application Note F
INSTALLING ONNET VERSION 2.0

The PCC-3000 system uses OnNet version 2.0 software to manage the TCP/IP stack.

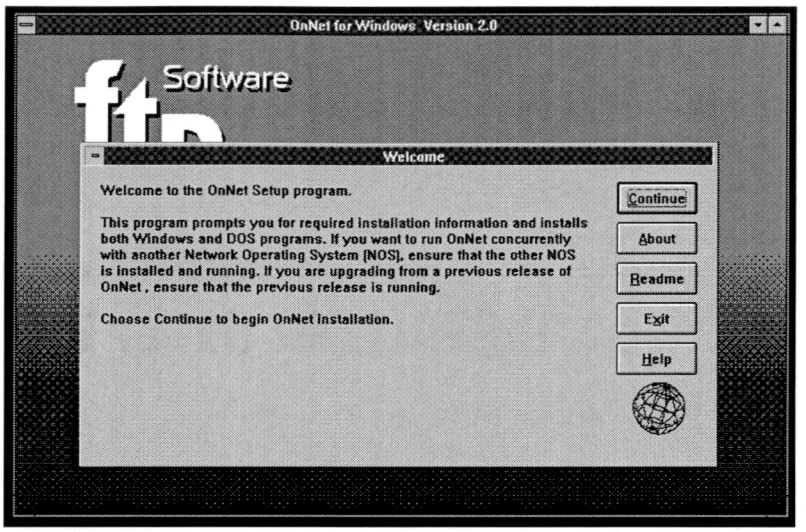
To install OnNet version 2.0

1. Ensure that the PowerVu Command Centre 3000 computer is turned on and functioning correctly.
2. Confirm that the packet driver is installed and loaded. From within DOS or Windows, use a text editor to examine the **AUTOEXEC.BAT** file to confirm the existence of the packet driver. For example, if you have the SMC8416 card installed, the line in **AUTOEXEC.BAT** should look like this:

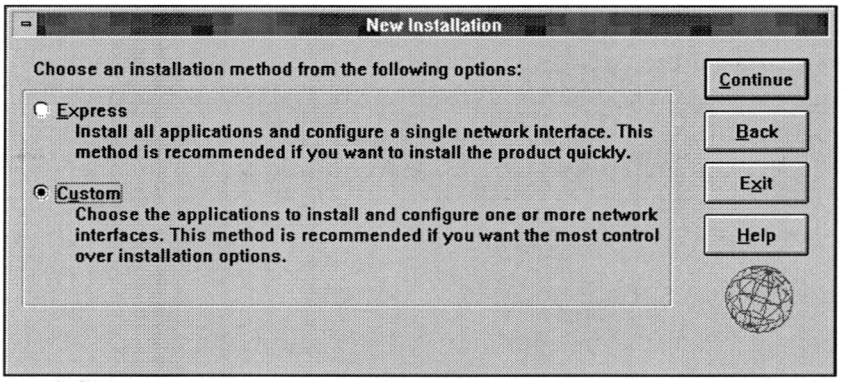
   C:\PACKET\PKT8000 0x68
3. Start Windows, if it is not already running.
4. Activate Program Manager and make Program Manager the active window, if required.
5. Place the OnNet version 2.0 diskette #1 in the floppy drive.
6. Select Run from the File menu in Program Manager and type the following in the Run dialog box:

   A:\SETUP

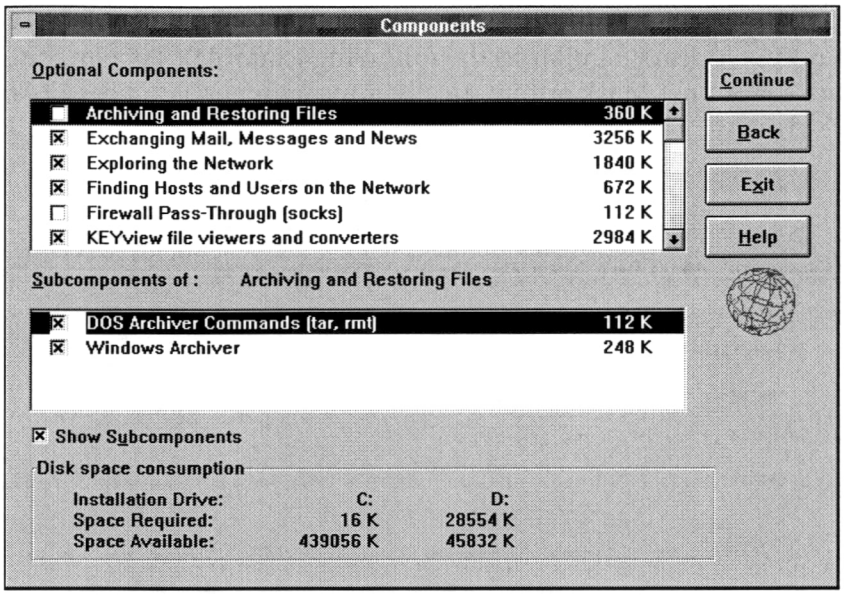
   Note: If your floppy drive is "B", type in B:\SETUP
7. Leave the Run Minimized check box unselected and click **OK**. The installation procedure begins and a Welcome window appears similar to the following example.


OnNet for Windows Version 2.0
Software
Welcome
Welcome to the OnNet Setup program.
This program prompts you for required installation information and installs both Windows and DOS programs. If you want to run OnNet concurrently with another Network Operating System (NOS), ensure that the other NOS is installed and running. If you are upgrading from a previous release of OnNet, ensure that the previous release is running.
Choose Continue to begin OnNet installation.
Continue
About
Readme
Exit
Help

8. Click the **Continue** button. If **win32** software is *not* loaded on your system, the OnNet installation program notifies you that it is installing win32s. When the win32 install is complete, a *New Installation* window is displayed similar to the example below.


New Installation
Choose an installation method from the following options:
Express
Install all applications and configure a single network interface. This method is recommended if you want to install the product quickly.
Custom
Choose the applications to install and configure one or more network interfaces. This method is recommended if you want the most control over installation options.
Continue
Back
Exit
Help

9. Select Custom and click **Continue**. The system displays a Serial Number/Authentication Key dialog box.
10. Type in the serial number and authentication key that appear on your Product Registration Card. The system displays a Destination Directory dialog box.
11. Do one of the following:
    - accept the displayed directory (this is the recommended setting), or
    - type in the full path name of an alternative directory, or
    - select a directory by browsing your system.
12. Click the Show Subcomponents check box to **On** when the Components window appears similar to the following example.

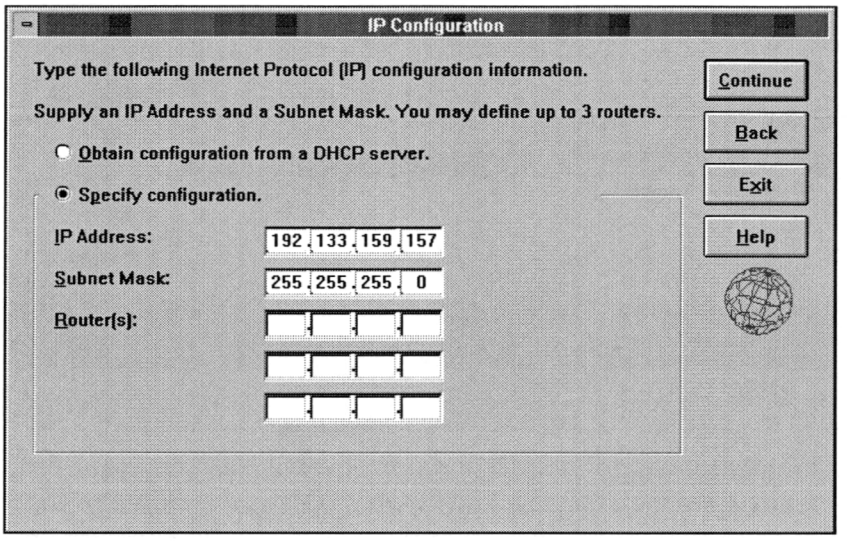

Components
Optional Components:
Archiving and Restoring Files 360 K
Exchanging Mail, Messages and News 3256 K
Exploring the Network 1840 K
Finding Hosts and Users on the Network 672 K
Firewall Pass-Through (socks) 112 K
KEYview file viewers and converters 2984 K
Continue
Back
Exit
Help
Subcomponents of : Archiving and Restoring Files
DOS Archiver Commands (tar, rmt) 112 K
Windows Archiver 248 K
Show Subcomponents
Disk space consumption
Installation Drive: C: D:
Space Required: 16 K 28554 K
Space Available: 439056 K 45832 K

13. Ensure that the Optional Component check boxes and Subcomponent check boxes (if applicable) are clicked to **On** or **Off** as described in the following table:

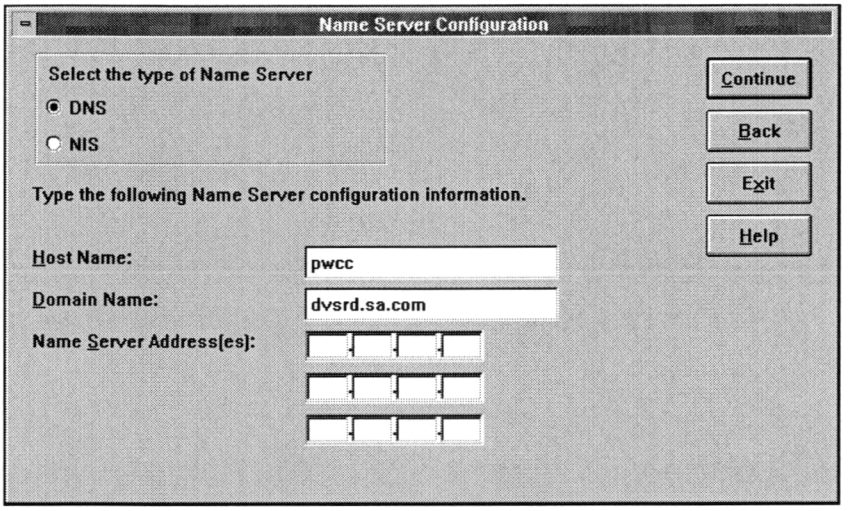
Optional Component	Check	Subcomponent	Check
Archiving and Restoring Files	**Off**	not required	
Exchanging Mail, Messages and News	**Off**	not required	
Exploring the Network	**Off**	not required	
Finding Hosts and Users on the Network	**On**	**Windows Ping**	**On**
Firewall Pass-Through	**Off**	not required	
KEYview file viewers and converters	**Off**	not required	
Logging into a Remote Host	**On**	**Windows Terminal Emulation (wtnvt)**	**On**
Network File and Print Services	**Off**	not required	
Printing	**Off**	not required	
Reference Desk	**On**	**All items selected**	**On**
Tools	**On**	**Windows Retriever**	**On**
Transferring Files (FTP)	**On**	**Windows FTP Client**	**On**
Server Control	**On**	not required	

14. Select the detected driver (PKTDRV) when the Found Existing Driver dialog box appears and click **Continue**.
15. Select **DIX-Ethernet** when the Network Type dialog box appears and click **Continue**.

16. Click the Specify Configuration radio button to **On** when the IP Configuration window appears (similar to the following example). Type in the IP Address. The data for Subnet Mask automatically appears when you press **TAB** to go to the next row.


IP Configuration
Type the following Internet Protocol (IP) configuration information.
Supply an IP Address and a Subnet Mask. You may define up to 3 routers.
Obtain configuration from a DHCP server.
Specify configuration.
IP Address:
192 . 133 . 159 . 157
Subnet Mask:
255 . 255 . 255 . 0
Router(s):
Continue
Back
Exit
Help

17. Click the **Add** button to install the PPP driver when the Network Interface Summary window appears.
18. Select Install a New Driver and click **OK** when the Found Existing Driver window appears.
19. Select Serial Port Using SLIP or PPP and click **OK** when the Network Card window appears.
20. Click the Point-to-Point Protocol (PPP) radio button to **On** when the Serial Protocol window appears and click **OK**.
21. Confirm that the default interface is PKTDRV when the Network Interface Summary window reappears and click **Continue**.
22. Type in and select the appropriate settings on the Modem Configuration window and click **Continue**.
23. Type in the Host Name as **pwcc** (PowerVu Command Centre) and the domain name as **dvsrd.sa.com** similar to the following example and click **Continue**.



24. Type in the user name you want to use when connecting to the remote system in the Username Configuration window and click **Continue**. Note that a user name is *not* a required item.
25. Select the GMT (Greenwich Mean Time) as the default time zone for both the server and the client computer in the Time Zone Configuration window and click **Continue**.
26. Click **Continue** and follow the instructions on screen for copying files from the installation diskettes.
27. Click **Yes** when the Update DOS System Files window appears. This portion of the install program modifies your **AUTOEXEC.BAT** file so that OnNet works properly.

    The installation program then notifies you when the setup is complete and lists the files that were updated on your system during the install.
28. Click **Restart System** when the Restart System window appears. When the computer has restarted, OnNet is ready for use.

GLOSSARY

The following terms or acronyms are referenced in this manual. Each term or acronym is accompanied by a definition or a brief explanation.

Addressed Data Packet	An addressed data packet is an encrypted data message which is broadcast as part of the digital signal. The packet begins with a non-encrypted numerical address which specifies the destination decoder. Only the destination decoder is capable of decrypting the rest of the packet. A variety of information can be delivered by addressed data packets, from multi-session keys to memory patches.
ADP	Addressed Data Packet
Audio/Video Switcher	Refers to the unit which routes the analog video and audio source (mono or stereo) signals to the MPEG encoders. These switchers may be locally or remotely controlled via serial or parallel, RS-232 or RS-422 data conventions.
Authorization	This is the action of enabling a decoder to receive and recognize a particular set of broadcast services as defined in the EMM.
BAT	Bouquet Association Table. This DVB term is similar to NIT, but can tie together services among multiple transport streams.
CAS	Conditional Access System. This MPEG term indicates the ID for the conditional access method used to encrypt data.
CA System	Conditional Access System
CAT	Conditional Access Table. This MPEG term defines a table used to associate private EMM streams with a unique PID.
CBIP	Channel Bank Interface Port. This is a Scientific-Atlanta ASIC designed to transmit onto the backplane of the Channel Bank Encoder.
CBMUX	Channel Bank Multiplexer. This is a Scientific-Atlanta ASIC designed to receive from the backplane (from CBIP) of the Channel Bank Encoder.
CCP	Compression Control Processor
CDT	Code Download Table. Used to download code for the DEP and CCP microprocessors in the decoder.
CIRD	Compression Integrated Receiver Decoder

CMT	Conditional Access Message Table
CW	Control Words. This MPEG term identifies the seed for the service encryptors.
Decoder	This is the unit which decompresses a digital signal, to recover the video, audio, data and teletext services based on conditional access.
DCP	Display Control Processor
DEMC	Digital Encoder Management Computer
DISE	Digital Inboard Security Element. Another name for the ISE.
DME	Digital Multiplexer Encoder. Refers to the unit which receives compressed video, audio and utility data from the MPEG encoder and then multiplexes them into a single digital signal.
DOSE	Digital Outboard Security Element. Another name for the OSE.
Downlink	This is a generic term for a decoder installation site.
DVB	Digital Video Broadcasting. Specifications and standards created by the European Broadcasting Union to ensure adherence to the MPEG 2 video and audio transmission standards.
ECM	Entitlement Control Message. Contains Global System Data and Virtual Channel packets. Carried in the form of CMT (Conditional Access Message Table). ECM streams are private data. The stream is carried on a PID and may contain one or more ECM messages. Included in the ECM message may be a VCP (Virtual Channel Packet) which contains multiple virtual channel definitions, one for each program number carried in the transport stream.
EIT	Event Information Table. This DVB term defines a table carrying programming information.
Elemental Stream	A stream of packets carrying one service (i.e., video, audio, data, teletext, or other types).
EMM	Entitlement Management Message. This MPEG term defines a message that carries all the global and addressed control information. In the CIRD, this is system data and ADPs.
Encoder	Refers specifically to the MPEG encoder.
Encryption Group	See Scrambling Group.
EPG	Electronic Program Guide. A program guide implemented within the decoder. Can also be used to perform channel changes and PPV buys.
FEC	Forward Error Correction
General Message	This refers to a teletext message which is accessed by all decoders when receiving the General Message command from the encoder.
GID	Group ID

Hexadecimal Numbers	These are sequential numbers 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, in base 16. Using a single hexadecimal number, a value between 0 and 15 may be represented.
IRD	Integrated Receiver Decoder
ISE	Inboard Security Element. Generic name for *Internal Security Device.*
Mnemonic	This is a code consisting of an uppercase alpha character plus one or two optional alphanumeric characters.
Modulator	Refers to the QPSK modulator which accepts the digitally multiplexed video signal from the multiplexer.
MPEG	Motion Picture Experts Group. This is the international standards committee set up to define how video and audio should be encoded and how these services should be transported.
MPEG Encoder	Refers to the unit which accepts analog or digital television signals and outputs an MPEG compatible channel encoded digital bit stream with error protection, data and other services using compression processing.
MSK	Multi-Session Key
Mux	Refers to the Digital Multiplexer which receives compressed video and audio data from the MPEG encoder and then multiplexes them into a single digital signal.
NABTS	North American Teletext
Neilsen	Neilsen Rating Service
NIT	Network Information Table. This MPEG term identifies the table carrying physical network parameters (i.e., frequency, modulation type, etc.).
OSE	Outboard Security Element. The external version of the ISE. A replaceable security module.
PAT	Program Association Table. This MPEG term identifies the table carrying program number assignments to program map tables. Carried in the PID.
PCR	Program Clock Reference
PES	Packetized Elemental Stream. The MPEG term for packets carrying physical video and audio services. These may span multiple payloads of a single PID within the transport stream.

PID

Packet ID. The PID is the central identifier for transport packets and is normally assigned at the time of system setup. Each stream must have a unique PID. The PID contains a PMT which points to all remaining PID streams in the multiplex.

It is recommended that service PIDs be assigned as follows:
Digit 1 = Signal number
Digit 2 = Encoder number (zero for MUX)
Digit 3 = Slot number
Digit 4 = Index number (i.e., sequential cards in chassis).

Other recommended PID numbers are:
PMT PID = 5000 plus the virtual channel number
ECM PID = 6000 plus the virtual channel number
EMM PID = 500 (default)
OS Download 7000 & 7001 (default)

Note that these are *recommended* numbering schemes only.

PMT

Program Map Table. The MPEG term for the table carrying the assignment of all PIDs within the multiplex which carry programs (video and/or audio elemental streams).

PSI

Program Specific Information. This MPEG term defines all other data (except video and audio services) within the payload of transport packets.

Receiver

Refers to Scientific-Atlanta Models D9223 and D9233 digital compression satellite receivers

RF Switcher

Refers to the RF protection switch which accepts the 70 MHz output from both the primary and secondary modulators and outputs the selected signal to the upconverter for satellite transmission to the downlink site(s).

RST

Running Status Table. This DVB term defines the table carrying information about the timing of the current program.

Scrambling Group

The Scrambling Group identification numbers are assigned to the video, audio and utility data service for security purposes. Each service may be assigned a number and each number can be unique. A suggested numbering system is that the Group ID begin with the encoder number of the associated card.

This version of PCC-2000 lets you assign a unique ID number to the video and utility data services and (for added security) up to four unique ID numbers for each of the audio services.

However, services combined together can share the same Group ID (e.g., audio and video services from encoder 5 can be Group 5 *if the services are combined to create a virtual channel*).

It is strongly recommended that unrelated audio services be assigned their own Group IDs to ensure that encryption is uniformly unique throughout the system.

SDT

Service Description Table. This DVB term defines the table carrying information about individual elementary streams.

Service	A service is defined as any one of the information delivery channels of the digital system. Video is one service, and each audio channel is a separate service. Other services include: utility data channel, reassigned data channels, teletext and remote control outputs.
ST	Stuffing Table. Enables PSI tables to be filled out without using the MPEG defined system.
System Data	This is data which is received by all decoders. It consists of a wide variety of information which is transmitted by all decoders simultaneously. System data is heavily error-protected may be optionally encrypted.
SWIF	Single Wire Interface Fibre
Uplink	This generally refers to all associated computers, primary and secondary (standby) units, and other equipment at the transmitting site.
Utility Data	This is a general-purpose data channel which carries asynchronous or synchronous data baud via an RS-232 output on most commercial compression decoders.
VBI	Vertical Blanking Interval
Virtual Channel	This is the number assigned to a channel carrying events applicable to a particular service.
Virtual Channel Service	This is the virtual channel packet information transmitted with each virtual channel. Each packet contains information such as the teletext set (service) assignment, the transmission source (i.e., encoder number and audio source configuration - e.g., single or dual channel mono, or stereo), and the decoder output assignment (i.e., video, audio outputs 1-4, and teletext). Events are scheduled for transmission for each virtual channel based on its service assignment (i.e., television, radio or teletext).
VITC	Vertical Interval Time Code
WST	European Teletext

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